ENTECH
ENGINEERING, INC.

505 ELKTON DRIVE
COLORADO SPRINGS, CO 80907
PHONE (719) 531-5599
FAX (719) 531-5238

July 7, 2004

Karl F. Andrews, Jr.
102 East Pikes Peak Avenue, Suite 200
Colorado Springs, Colorado 80903

RECEIVED
JUL 22 2004
PLANNING DEPARTMENT

Re: Addendum to Soil, Geology and Geologic Hazard Study
Latigo Business Center
El Paso County, Colorado
Entech Job Nos. 56382 and 56392

Dear Mr. Andrews:

As requested, the revised preliminary plat has been reviewed with respect to geologic hazards and conditions on the above-referenced site. This letter serves as an Addendum to both the Soil, Geology, and Geologic Hazard Studies preformed by Entech Engineering, Inc. dated August 28, 2002 for Latigo Business Center, Lots 1-3 (Job No. 56392) and Lots 4 and 5 Latigo Business Center, Filing No. 1 (Job No. 56382). The sites are combined under Latigo Business Center, Lots 1-5 on the revised preliminary plat, received from LDC, Inc. June 25, 2004. The revised Geology and Engineering Geology Map is presented in Figure 1.

The revised preliminary plat lot layout is virtually unchanged from the lot layout reviewed in the original reports. The lot numbers and a street name have changed. According to the revised preliminary plat, the existing floodplain is to be rerouted and contained in a drainage easement. This will allow for more buildable area on Lot 5. Temporary Detention Ponds are proposed, as well. Drains may be necessary in areas adjacent to the Detention Ponds and in the floodplain area, even after filling, to prevent the intrusion of water into areas below grade. Drains may also be necessary in other areas of the site identified as seasonal shallow groundwater (sw) and potentially seasonal shallow groundwater (psw) as discussed in the reports. Finished floor levels should be a minimum of one foot above the floodplain level. Approval of the proposed drainage plan will be required prior to construction in the existing floodplain. All soft, wet, or organic soils should be removed prior to any filling.

Other hazards that affect construction on this site include artificial fill, expansive soils, potentially unstable slopes, and hydrocompaction. It is anticipated that the small extent of potentially unstable slopes will be regraded during site improvements associated with the proposed drainage easement. Slopes should be regraded to no steeper than 3:1 unless held by retaining walls. Mitigation for artificial fill, expansive soils, loose soils, and hydrocompaction have been discussed in the Soil, Geology and Geologic Hazard reports. These conditions can be satisfactorily mitigated with proper engineering design and construction practices.

We trust this has provided you with the information you required. If you have any questions or need additional information, please do not hesitate to contact us.

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Kristen A. Andrew-Hoeser
Professional Engineering Geologist

Reviewed by:

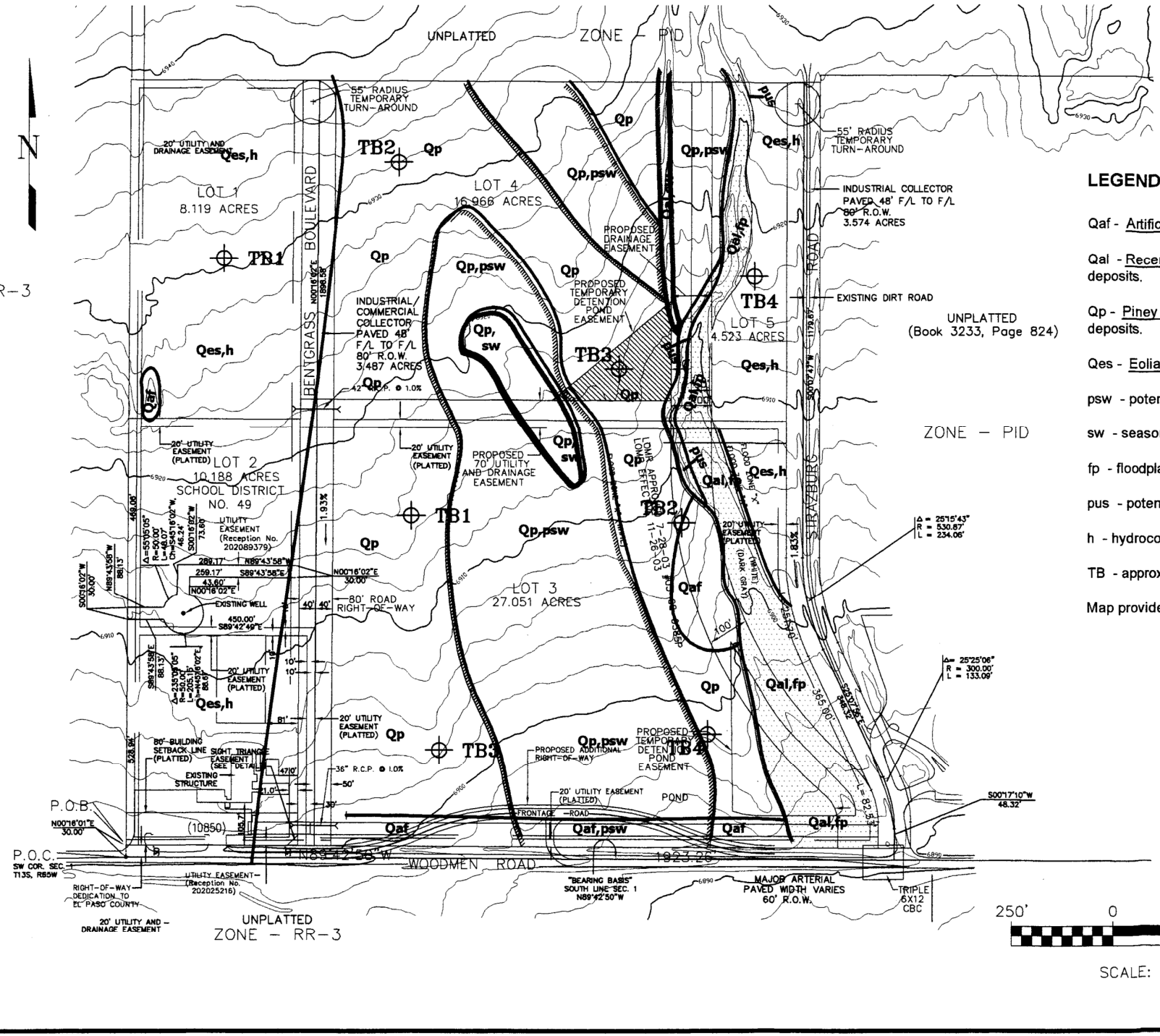
Joseph C. Goode, Jr., P.E.
President

COLORADO REGISTERED
JOSEPH COLLIN GOODE JR.
23725
PROFESSIONAL ENGINEER

KAH/ek

Encl.

Entech Job No. 56392
2MSW/ltrs/2002/56392Adden



LEGEND

Qaf - Artificial Fill of Quaternary Age: man-made fill.

Qal - Recent Alluvium of Quaternary Age: recent stream deposits.

Qp - Piney Creek Alluvium of Quaternary Age: older stream deposits.

Qes - Eolian Sand of Quaternary Age: wind blown sands.

psw - potentially seasonal shallow groundwater area.

sw - seasonal wet area.

fp - floodplain.

pus - potentially unstable slope

h - hydrocompaction

TB - approximate Test Boring location

Map provided by LDC, Inc.

GEOLOGY / ENGINEERING GEOLOGY MAP

ENTECH
ENGINEERING, INC.

505 ELKTON DRIVE
COLORADO SPRINGS, CO 80907
PHONE (719) 531-5599
FAX (719) 531-5238

SOIL, GEOLOGY AND GEOLOGIC HAZARD STUDY LATIGO BUSINESS CENTER, LOTS 1-3 WOODMEN ROAD EL PASO COUNTY, COLORADO

Prepared for

Karl F. Andrews, Jr.
102 E. Pikes Peak Avenue
Colorado Springs, Colorado 80903

August 28, 2002

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Kristen A. Andrew-Hoeser
Professional Engineering Geologist

KAH/ek

Encl.

Entech Job No. 56392
2MSW/rep/2001/56392sgghz

Reviewed by:

Joseph C. Goode, Jr., P.E.
President

COLORADO REGISTERED
JOSEPH COLLIN GOODE JR.
23725
PROFESSIONAL ENGINEER

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1.0 SUMMARY

Project Location

The project lies in a portion of the SW ¼ of Section 1, Township 13 South, Range 65 West, in El Paso County, Colorado. The site is located north of Woodmen Road, west of Meridian Road approximately 1 mile northeast of Falcon, Colorado.

Project Description

Total acreage involved in the development is approximately 30 acres. It is our understanding that the development is to consist of commercial development. We also understand that the development will be serviced by Woodmen Hills Metropolitan District, therefore, percolation testing will not be required.

Scope of Report

This report is intended to present a geologic investigation and treatment of engineering geologic hazards.

Land Use and Engineering Geology

The site was found suitable for the proposed development. Areas were encountered where the geologic conditions will impose some constraints on development and land use. These include areas of expansive soils, seasonal shallow groundwater areas, potential seasonal shallow groundwater areas, floodplain, potentially unstable slopes, hydrocompaction, shallow bedrock, and artificial fill. These conditions will be discussed in greater detail in Section 5.3 of this report.

In general, it is our opinion that the proposed type of development is suitable with the observed geologic conditions. All recommendations are subject to the limitations discussed in the report.

2.0 GENERAL SITE CONDITIONS AND PROJECT DESCRIPTION

The site is located in a portion of the SW ¼ of Section 1, Township 13 South, Range 65 West, in El Paso County, Colorado. The site is located north of Woodmen Road, approximately 1 mile northeast of Falcon, Colorado. The approximate boundaries of the site are as shown on the Vicinity Map, Figure 1.

The topography of the site is gently to moderately sloping over the majority of the site. The major drainage on-site trends in southerly direction. No water was observed flowing in the drainage at the time of this investigation, however, evidence of periodic shallow water was observed in the vegetation and surface soils. The boundaries of the site are shown on the USGS map, Figure 2. Previous land uses have been agricultural as the area has been primarily used as grazing and pasture land. The site contains primarily low to mid-prairie grasses over the entire site. Site photographs are included in Appendix C. The approximate locations and directions of the photographs are indicated on the Test Boring Location Plan, Figure 3.

Total acreage involved in the proposed development is approximately 30 acres. It is our understanding that the proposed development will consist of commercial development. The area will be serviced by Woodmen Hills Metropolitan District.

3.0 SCOPE OF THE REPORT

The scope of this report will include the following:

- A general geologic analysis utilizing published geologic data. Detailed site-specific mapping will be conducted to obtain general information in respect to major geographic and geologic features, geologic descriptions and their effects on the development of the property.

4.0 FIELD INVESTIGATION

Our field investigation consisted of the preparation of a geologic map of any bedrock features and significant surficial deposits. The Soil Conservation Service (SCS) survey was also reviewed to evaluate the site.

The positions of mappable units with the subject property are shown on the Geologic Map. Our mapping procedures involved both field reconnaissance and measurements, and air photo reconnaissance and interpretation. The same mapping procedures have also been utilized to produce the Engineering Geology Map, which identified pertinent geologic conditions affecting development.

A subsurface soil investigation was performed as part of the field investigation. This investigation consisted of drilling 4 test borings across the site. The borings were drilled with a power driven continuous flight auger drill rig to depths of 15 and 20 feet. Samples were obtained during drilling using the Standard Penetration Test, ASTM D-1586, utilizing a 2-inch O.D. Split Barrel Sampler and a California Sampler. Results of the penetration tests are shown on the drilling logs to the right of the sampling point. The drilling logs are included in Appendix A of this report. The locations of the test borings are shown on the Test Boring Location Plan (Figure 3) and the Geology Map (Figure 8).

Laboratory testing was performed to classify and determine soils engineering characteristics. Laboratory tests included moisture content, ASTM D-2216, grain size analysis, ASTM D-422, and Atterberg Limits, ASTMD-4318. Swell tests included FHA swell testing and Denver Swell/Consolidation Testing. Results of the laboratory testing are included in Appendix B. A Summary of Laboratory Test Results is presented in Table 1.

A Drainage Basin Planning Study for the Falcon area was performed by URS, dated December 15, 2000 (Reference 1). A Soil and Geology Study was performed on the property south of the site by Entech Engineering, Inc. for Falcon Highlands, dated December 26, 2001 and revised January 24, 2002 (Reference 2). Information from these reports was used in evaluating the site.

5.0 SOIL GEOLOGY AND ENGINEERING GEOLOGY

5.1 General Geology

Physiographically, the site lies in the western portion of the Great Plains Physiographic Province. Approximately 15 miles or so to the west is a major structural feature known as the Rampart Range Fault, marking the boundary between the Great Plains Physiographic Province and the Southern Rocky Mountain Province. The site exists within the southern edge of a large structural feature known as the Denver Basin. Bedrock in the area tends to be very gently dipping in a northerly direction. The rocks in the area of the site are sedimentary in nature, and typically Tertiary to Upper Cretaceous in age. The bedrock underlying the site itself is the Dawson formation. Overlying the Dawson formation are unconsolidated deposits of alluvium, man-made and residual soils. The site's stratigraphy will be discussed in more detail in the following section.

5.2 Soil Conservation Service

The Soil Conservation Service has mapped two soil types on the site (Figure 4)(Reference 3). In general, they are fairly similar ranging from sandy loam and loamy sand to gravelly loamy sand. Soils are described as follows:

Type	Description
9	Blakeland complex, 1-9% slopes
19	Columbine gravelly sandy loam, 0-3% slopes

Complete descriptions of each soil type are presented in Figures 5 and 6. The soils have generally been described to have rapid to very rapid permeabilities. The potential for flooding is present in some areas on Soil Type 19. Soil Type 19 exists across the majority of the site. Soil Type No. 9 exists along the eastern edge of the site and has been described as having good potential for building sites. Possible hazards with soil erosion are present on the site. The erosion potential can be controlled with vegetation. The majority of the soils have been described to have slight to moderate erosion hazards.

5.3 Site Stratigraphy

Four mappable units were identified on this site which, from youngest to oldest, are identified as follows:

- **Qaf** **Artificial Fill of Holocene Age:** These are man-made fill deposits associated with fill piles on-site. Other areas of fill not mapped may be encountered on this site. Unless records can be obtained, the fill will be considered uncontrolled for construction purposes.

- **Qal** **Recent Alluvium of Holocene Age:** These are recent stream deposits associated with the drainage on-site. These materials generally consist of silty to clayey sands and may contain clay lenses.

- **Qes** **Eolian Sand of Quaternary Age:** These deposits are medium to fine grained soil deposited on the site by the action of the prevailing winds from the west and northwest. They typically occur as large dune deposits or narrow ridges. These soil types are typically tan to brown in color, and tend to have a very uniform or well-sorted gradation. These materials tend to have a relatively high permeability and low density.

- **Qp** **Piney Creek Alluvium of Holocene Age:** This material is a water deposit alluvium, typically classified as a silty to well-graded sand, brown in color and of moderate density. The Piney Creek Alluvium can sometimes be very highly stratified containing thin layers of very silty and clayey soil.

The bedrock underlying the site consists of the Dawson Arkose Formation of Tertiary to Cretaceous Age. This formation typically consists of arkosic sandstone with interbedded fine grained sandstone, siltstone and claystone. The bedrock encountered in the test borings consisted of clayey to silty arkosic sandstone.

The formations listed above were mapped from field reconnaissance, the test borings drilled on site, and the Geologic Map of the Pueblo 1x2 Quadrangle, South-Central Colorado, distributed by the USGS in 1979 (Reference 4) (Figure 7). The Geology Map prepared for the site is presented on Figure 8.

5.4 Soil Conditions

The soils encountered in the test borings drilled by Entech Engineering, Inc. consisted of clean to silty and clayey sand (SW, SM, SC) and silty clay (CL) overlying silty to clayey sandstone (SM, SC). The upper soils were encountered at loose to dense states and moist conditions. The clayey soils are slightly to moderately expansive. An FHA swell pressure of 1364 psf was measured on the silty clays. A Denver Swell of 0.8% was measured on the clayey sandstone. Bedrock was encountered at depths ranging from 2 to 17 feet in the test borings. A Summary of Laboratory Test Results is presented in Table 1. A Summary of Depth to Bedrock and Groundwater is presented in Table 2.

5.5 Groundwater

Groundwater was encountered at 18 feet in Test Boring No. 2. Groundwater was not encountered in any of the other test borings during or subsequent to drilling which were drilled to 15 and 20 feet. The test borings were drilled during a very dry period and water levels may not be indicative of those that could be encountered during periods with normal or high moisture. The vegetation on aerial photographs of the site indicate higher moisture conditions, particularly in the spring.

Fluctuation in groundwater conditions may occur due to variations in rainfall and other factors not readily apparent at this time. Isolated sand layers within the variable soil profile, sometimes only a few feet in thickness and width, can carry water in the subsurface. Water may also flow on top of the bedrock. Groundwater problems associated with perched water tables have been encountered in other developments in the area of the site. Contractors should be cognizant of the potential for the occurrence of such subsurface water features during construction on-site.

6.0 ENGINEERING GEOLOGY – IDENTIFICATION AND MITIGATION OF GEOLOGIC HAZARDS

As mentioned previously, mapping has been performed on this site to produce an Engineering Geology Map (Figure 8). This map shows the location of various geologic conditions of which the developers should be cognizant during the planning, design and construction stages of the project. These geologic conditions and the recommended mitigation techniques are as follows:

sw *Seasonal Shallow Groundwater Area*

In these areas, we would anticipate periodically high subsurface moisture conditions and frost heave potential.

Mitigation: In these locations, shallow foundations are recommended. Foundations must have a minimum 30-inch depth for frost protection. In areas where high subsurface moisture conditions are anticipated periodically, subsurface perimeter drains and underslab drains or capillary breaks may be necessary to dewater the excavation. Typical details for drains are presented in Figures 10 through 12. Basements or useable areas located below grade are not recommended in these areas. It may be desirable on some lots to build up the building area to raise the foundation further above anticipated groundwater level. Any grading in these areas should be done to direct surface flow around construction to avoid areas of ponded water. Further investigation will be necessary to determine the groundwater depth at each individual building site. Areas of perched water are also possible across much of the site due to lenses of sand overlying impermeable sandstones and claystones. Areas of perched water tables have been encountered in other developments in the area of the site. One particular area was noted on the north central portion of the site. Contractors should be cognizant of the potential for subsurface water during construction on each individual site.

psw *Potential Shallow Groundwater Area*

In these areas, we would anticipate the potential for periodic shallow subsurface moisture conditions and frost heave potential. These areas did not indicate the yearly presence of shallow groundwater as the seasonal shallow groundwater areas did, however, based on topography, aerial photographs, and site conditions, the potential exists for shallow groundwater during high moisture periods or years. Furthermore, the test borings were drilled during a very dry period and water levels may not be indicative of those that may be encountered during periods of normal or high moisture. The same mitigation recommendations for Seasonal Shallow Groundwater areas apply to these Potential Shallow Groundwater areas. Further investigation of each building site may be necessary to delineate the depth to groundwater. Basements should not be used without investigations on each site. Groundwater may be at sufficient depth to not affect shallow foundations in these areas.

fp *Floodplain*

Portions of the site lie within a floodplain zone according to the FIRM Map No. 08041CO575F, dated March 17, 1997 (Figure 9)(Reference 5). The approximate FEMA floodplain boundaries are also indicated on the Engineering Geology Map, Figure 8. A drainage easement is planned for this area according to the development plan (Figures 3 and 8). We would anticipate some channel improvements would be incorporated in the grading plan that would contain the floodplain to the drainage easement. Exact locations of floodplain and specific drainage studies are beyond the scope of this report. Finished floor levels must be located a minimum of one foot above floodplain levels.

af *Artificial Fill*

These are man-made fill deposits associated with fill piles on site. Other areas of fill not mapped may be encountered on the site.

Mitigation: Small areas of fill can be penetrated by foundations. Should any uncontrolled fill be encountered beneath foundations, removal and recompaction at 90% of Modified Proctor Dry Density, ASTM D-1557 will be required.

ex *Expansive Soils*

Expansive soils were encountered in some of the test borings drilled on site. The expansive soils are highly sporadic, therefore, none have been indicated on the map. The soils are moderately expansive and can cause differential movement in the structure foundations.

Mitigation: Should expansive soils be encountered within 3 feet below the foundation, mitigation will be necessary. Mitigation of expansive soils may include overexcavation and replacement with non-expansive structural fill at 90% of Modified Proctor Dry Density, ASTM D-1557. Drilled pier foundation systems are another option in areas of highly expansive soils. Floor slabs on expansive soils should be expected to experience movement. Overexcavation and replacement with compacted non-expansive soils has been successful in minimizing slab movements. Final recommendations should be determined after additional investigation of each building site.

pus *Potentially Unstable Slope:* These are areas of steep slopes due to erosion along a drainage at the east end of the site It is anticipated this area can be avoided by

construction. A minimum setback of 20 feet should be maintained between buildings and the crest of the slopes. In areas where construction encroaches on potentially unstable slopes, regrading and erosion protection may be necessary.

h *Hydrocompaction:* Areas in which this hazard has been identified are acceptable as building sites. However, in areas identified for this hazard classification, we anticipate a potential for settlement movements upon saturation of these surficial soils. The low density, uniform grain sized, windblown sand deposits are particularly susceptible to this type of phenomenon.

Mitigation: The potential for settlement movement is directly related to saturation of the soils below the foundation areas. Therefore, good surface and subsurface drainage is extremely critical in these areas in order to minimize the potential for saturation of these soils. The ground surface around all permanent structures should be positively sloped away from the structure to all points, and water must not be allowed to stand or pond anywhere on the site. We recommend that the ground surface within 10 feet of the structures be sloped away with a minimum gradient of five percent. If this is not possible on the upslope side of the structures, then a well-defined swale should be created to intercept the surface water and carry it quickly and safely around and away from the structures. Roof drains should be made to discharge well away from the structures and into areas of positive drainage. Where several structures are involved, the overall drainage design should be such that water directed away from one structure is not directed against an adjacent building. Planting and watering in the immediate vicinity of the structures, as well as general lawn irrigation, should be minimized.

Areas of loose soils may also be encountered in these areas. Should loose soils be encountered beneath foundations, recompaction of the upper 2 feet of soil at 90% of Modified Proctor Dry Density, ASTM D-1557 may be required.

6.1 Relevance of Geologic Conditions to Land Use Planning

As mentioned earlier in this report, the development will be primarily commercial with open space areas along the drainage. The existing geologic and engineering geologic conditions will impose constraints on some development and construction. The most significant problems affecting development will be those associated with shallow bedrock and surface drainage on

site. These conditions can be satisfactorily mitigated through proper engineering design and construction practices. Areas of shallow bedrock will cause difficult excavation in many areas.

Soil susceptible to erosion will also require consideration during development. Erosion problems are extremely common throughout the region and may be satisfactorily mitigated through proper engineering design and construction of drainage systems.

Floodplain determination is beyond the scope of this report. According to the development plan, a drainage easement is proposed in the FEMA floodplain. Some channel improvements may be necessary to contain the floodplain within the drainage easement. The potential exists for seasonally shallow subsurface moisture conditions across other areas of the site. The test borings were drilled during a very dry period and may not be indicative of groundwater conditions under normal or high moisture periods. One area of potential seasonal seepage was noted based on vegetation in the central portion of the site. Seepage problems and perched water tables have been encountered in other developments surrounding the site. Areas of groundwater seepage, if encountered on site, may require drainage systems in order to dewater the area.

Basements are not recommended in areas where shallow groundwater is expected on a seasonal basis. In areas mapped as potential shallow groundwater, additional investigation will be necessary to further delineate the depth to groundwater and determine mitigation measures, if any, should basements be considered.

The soils were encountered at loose to dense states. Stemwall/ spread footing configurations are anticipated for the foundations on the site. Areas containing Arkosic sandstone will have high allowable bearing conditions. Difficult excavation should be anticipated in areas of shallow bedrock. Expansive layers may also be encountered in the soil and bedrock on this site. These areas are sporadic, therefore no areas were indicated on the maps. Expansive soils, if encountered, will require special foundation design. These soils will not prohibit development.

Areas of hydrocompaction are associated with the Eolian sand deposits on site. The potential for settlement due to saturation of soils exists in these areas. Good surface and subsurface drainage is recommended in these areas in order to minimize the potential for saturation of these soils.

Potentially unstable slopes were encountered along the drainage at the east end of the site. Unless stabilized, a minimum setback of 20 feet should be maintained between structures and the crest of the slopes. Erosion protection may be necessary.

In summary, the soils will provide suitable support for shallow foundations on site. These conditions can be mitigated with proper engineering and construction practices. Shallow bedrock, groundwater and surface drainage will affect construction on the site. These conditions can be mitigated with proper engineering and construction practices.

7.0 ECONOMIC MINERAL RESOURCES

Some of the sand associated with the upper materials on-site could be considered a low grade sand resource. According to the Aggregate Resource Maps, the site is mapped as upland deposits (Reference 6). Considering the silty to clayey nature of these soils and the relative abundance of similar materials throughout the region, they would be considered to have little significance as an economic resource.

8.0 EROSION CONTROL

The soil types observed on the site are mildly to moderately susceptible to wind erosion, and moderately to highly susceptible to water erosion. A minor wind erosion and dust problem may be created for a short time during and immediately after construction. Should the problem be considered severe enough during this time, watering of the cut areas or the use of chemical palliative may be required to control dust. However, once construction has been completed, and vegetation reestablished, the potential for wind erosion should be considerably reduced.

With regard to water erosion, loosely compacted soils will be the most susceptible to water erosion, residually weathered soils and weathered bedrock materials become increasingly less susceptible to water erosion. For the typical soils observed on site, allowable velocities for unvegetated and unlined earth channels would be on the order of 3 to 4 feet/second, depending upon the sediment load carried by the water. Permissible velocities may be increased through

the use of vegetation to something on the order of 4 to 7 feet/second, depending upon the type of vegetation established. Should the anticipated velocities exceed these values, some form of channel lining material may be required to reduce erosion potential. These might consist of some of the synthetic channel lining materials on the market or conventional riprap. In cases where ditch lining materials are still insufficient to control erosion, small check dams or sediment traps may be required. The check dams will serve to reduce flow velocities, as well as provide small traps for containing sediment. The determination of the amount, location and placement of ditch linings, check dams and of the special erosion control features should be performed by or in conjunction with the drainage engineer who is more familiar with the flow quantities and velocities.

Cut and fill slope areas will be subjected primarily to sheetwash and rill erosion. Unchecked rill erosion can eventually lead to concentrated flows of water and gully erosion. The best means to combat this type of erosion is, where possible, the adequate revegetation of cut and fill slopes. Cut and fill slopes having gradients more than three (3) horizontal to one (1) vertical become increasingly more difficult to revegetate successfully. Therefore, recommendations pertaining to the vegetation of the cut and fill slopes may require input from a qualified landscape architect and/or the Soil Conservation Service.

9.0 CLOSURE

It is our opinion that the existing geologic engineering and geologic conditions will impose some constraints on development and construction on the site. The proposed development and use is consistent with the anticipated geologic and engineering geologic conditions.

It should be pointed out that because of the nature of data obtained by random sampling of such variable and nonhomogeneous materials as soil and rock, it is important that we be informed of any differences observed between surface and subsurface conditions encountered in construction and those assumed in the body of this report. Individual investigations for building sites will be required prior to construction. Construction and design personnel should be made familiar with the contents of this report. Reporting such discrepancies to Entech Engineering, Inc. soon after they are discovered would be greatly appreciated and could possibly help avoid construction and development problems.

This report has been prepared for Karl Andrews for application to the proposed project in accordance with generally accepted geologic soil and engineering practices. No other warranty expressed or implied is made.

We trust that this report has provided you with all the information that you required. Should you require additional information, please do not hesitate to contact Entech Engineering, Inc.

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TABLES

TABLE 1

SUMMARY OF LABORATORY TEST RESULTS

CLIENT KARL F. ANDREWS, JR.
PROJECT FUTURE PID, ADJ TO WOODMEN RD
JOB NO. 56392

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	PASSING NO. 200 SIEVE (%)	LIQUID LIMIT (%)	PLASTIC INDEX (%)	FHA SWELL (PSF)	SWELL/ CONSOL (%)	UNIFIED CLASSIFICATION	SOIL DESCRIPTION
1	TB1	5'	23.6%					SM	SAND, SILTY
1	TB2	2-5'	24.0%	19	0			SM	SAND, SILTY
2	TB4	5'	81.8%			1364		CL	CLAY, SILTY
3	TB3	2-3'	16.4%					SM	SANDSTONE, SILTY
3	TB3	15'	46.3%	24	9			SC	SANDSTONE, CLAYEY
3	TB3	15'					0.8%	SC	SANDSTONE, CLAYEY

Table 2: Summary of Depths to Bedrock and Groundwater

Six Ninety Nine Properties
Falcon Hills
Job No. 41642

Test Boring No.	Depth to Bedrock (ft.)	Depth to Groundwater (ft.)
1	13	dry to 20
2	17	18
3	2	dry to 14
4	7	dry to 19

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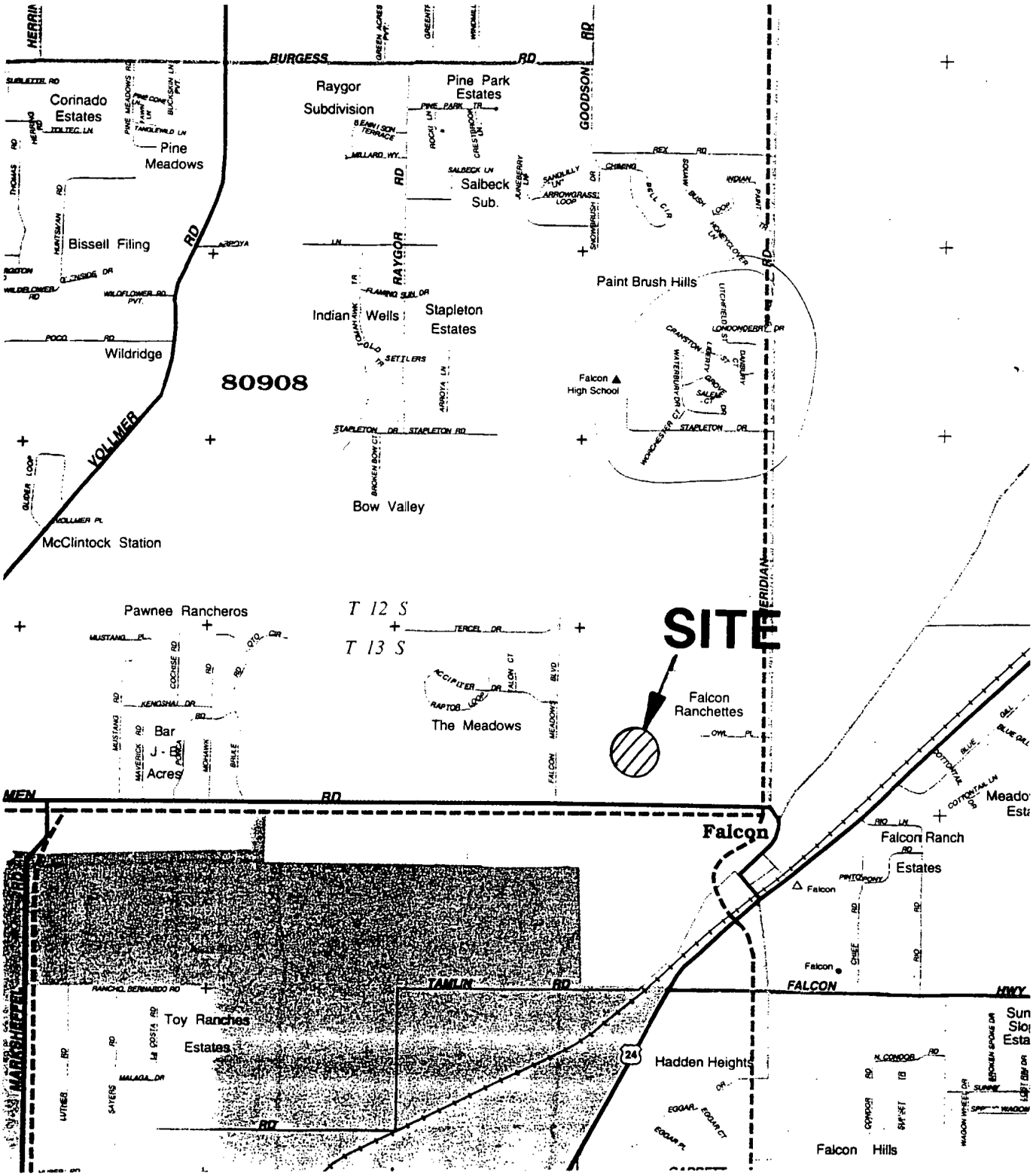
FIGURES



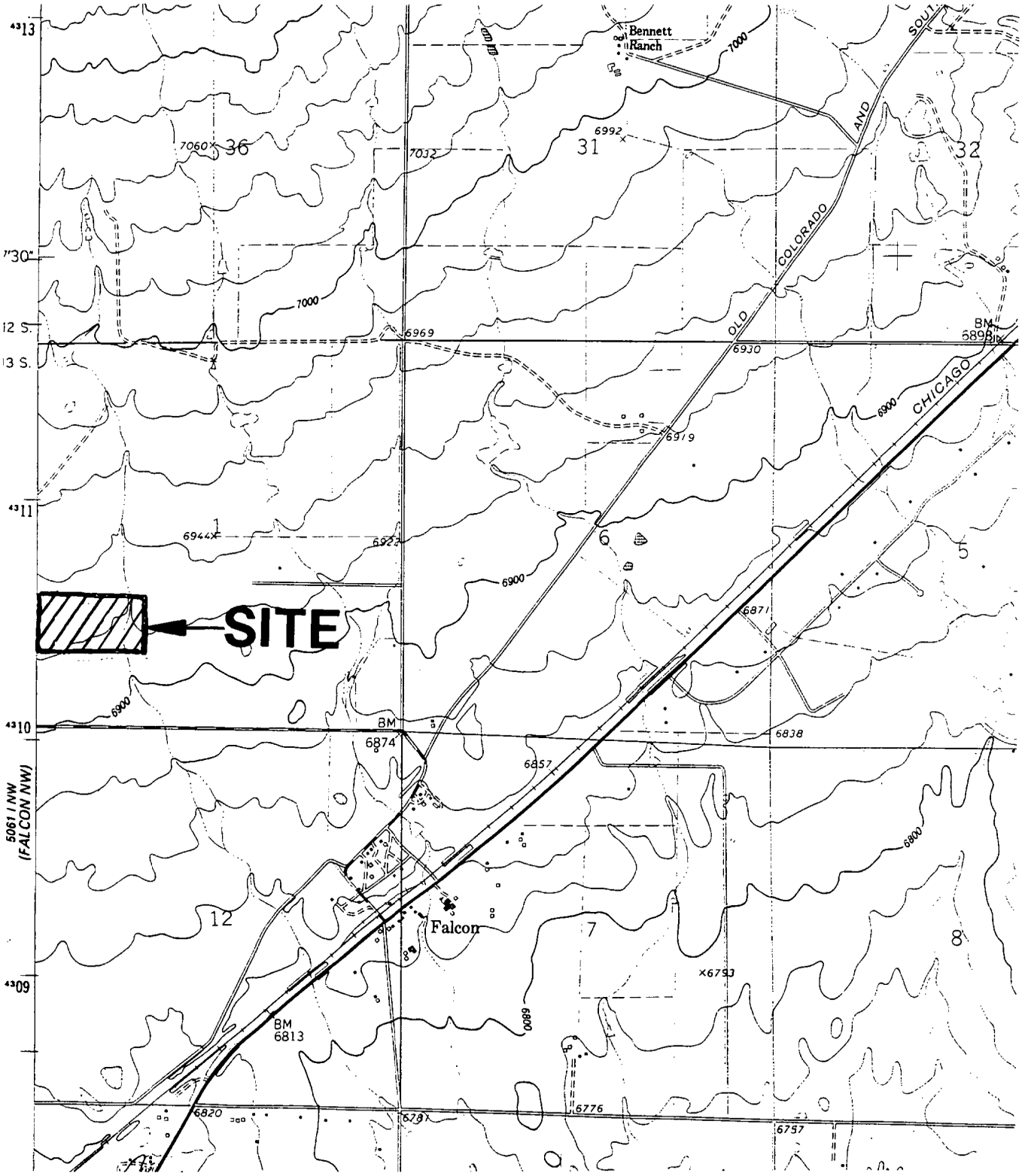
ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

VICINITY MAP
FUTURE PID
FOR: KARL ANDREWS

DRAWN:	DATE:	CHECKED:	DATE:
RJO	2AUG02		8/9/02

JOB NO.: 56392

FIG NO.: 1



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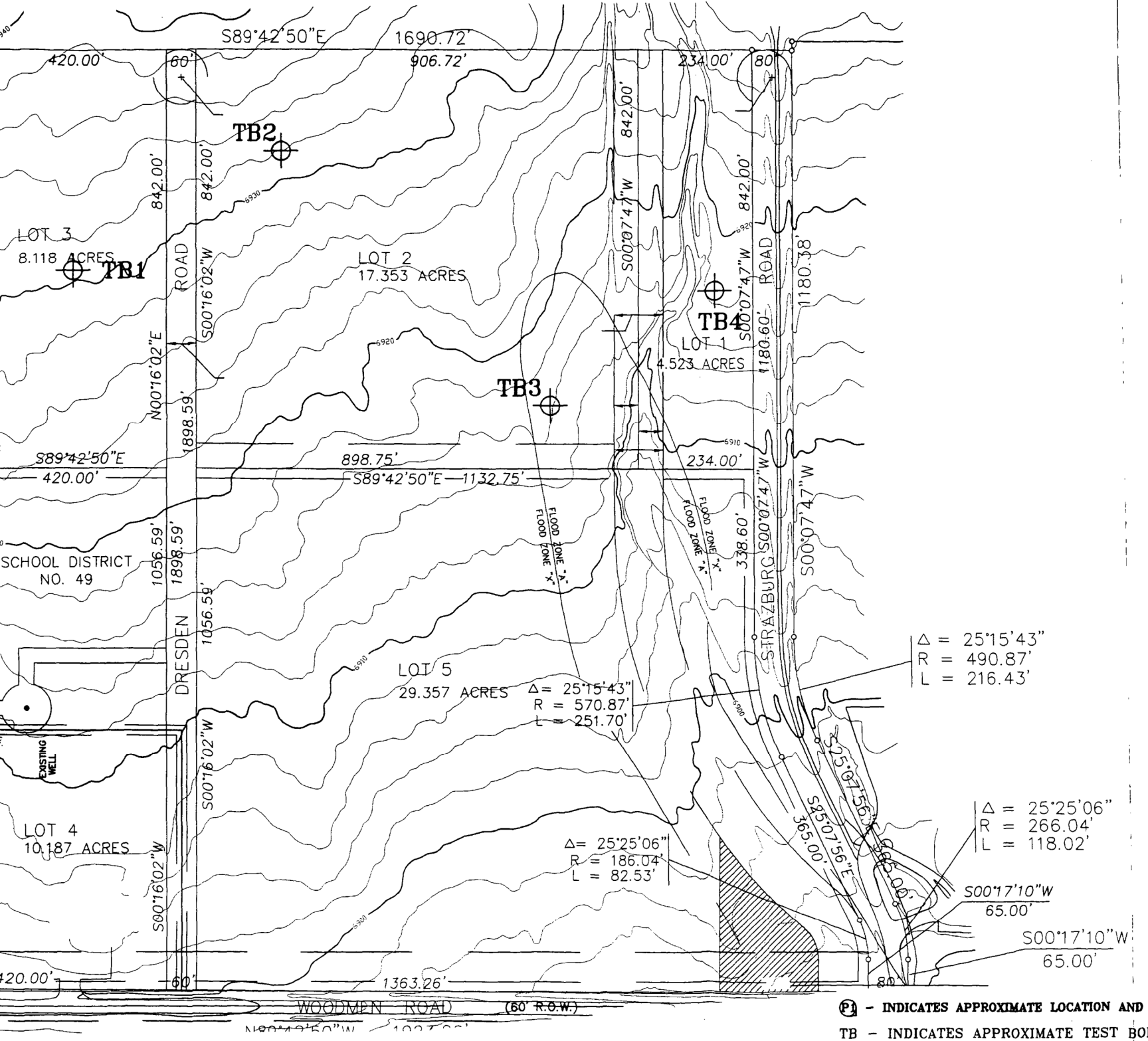
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

USGS MAP
FUTURE PID
FOR: KARL ANDREWS

DRAWN:	DATE:	CHECKED:	DATE:
RJO	2AUG02	KAA	8/19/02

JOB NO.: 56392

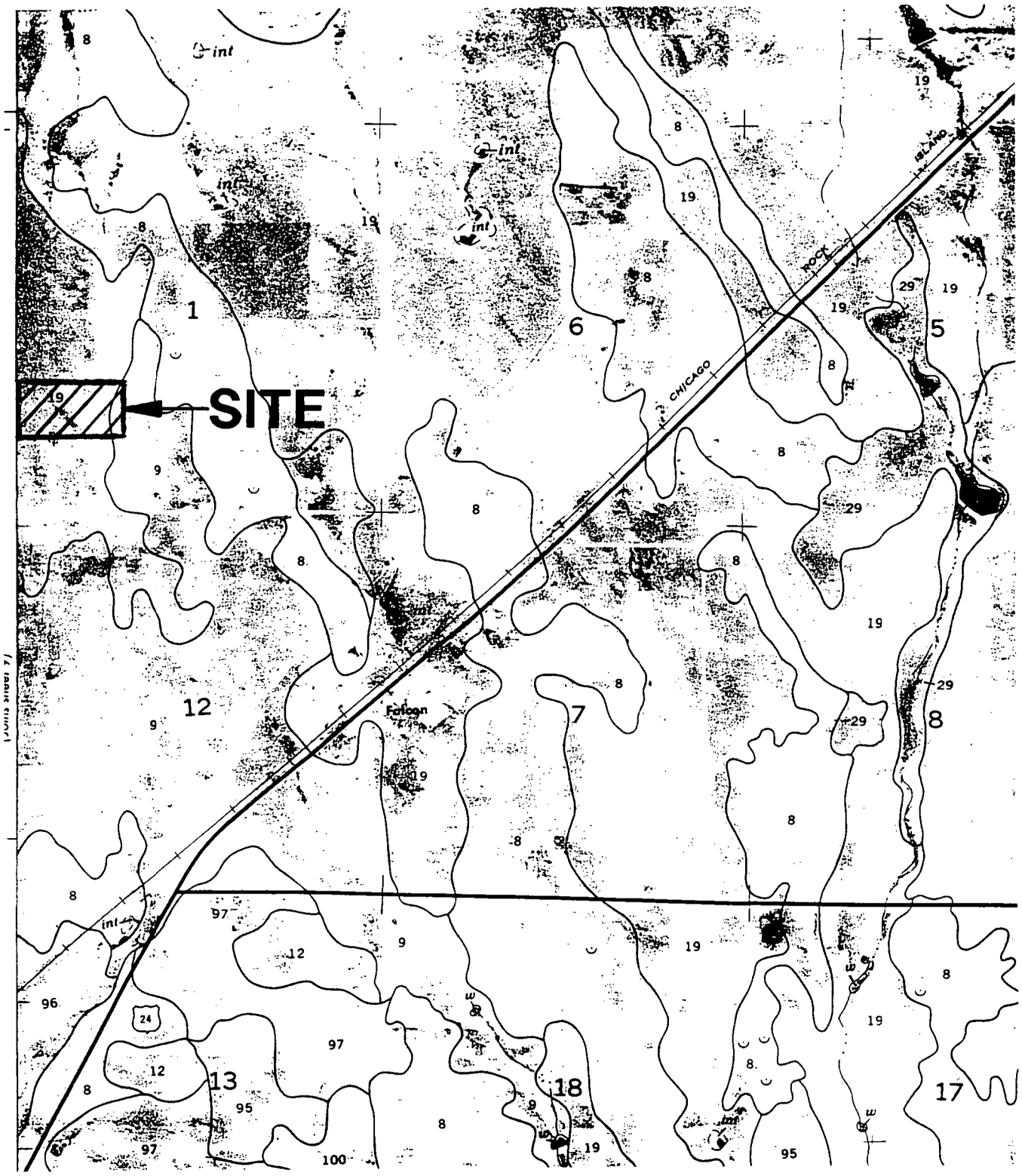
FIG NO.: 2



PRELIMINARY PLAN BY: LDC, INC.

(P1) - INDICATES APPROXIMATE LOCATION AND DIRECTION OF PHOTOGRAPH

TB - INDICATES APPROXIMATE TEST BORING LOCATION AND NUMBER



ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

SCS MAP
FUTURE PID
FOR: KARL ANDREWS

DRAWN:	DATE:	CHECKED:	DATE:
RJO	2AUG02	KAW	8/9/02

JOB NO.: 56392

FIG NO.: 4

9—Blakeland complex, 1 to 9 percent slopes. This complex is on uplands, mostly in the Falcon area. The average annual precipitation is about 15 inches, the average annual air temperature is about 47 degrees F, and the frost-free period is about 135 days.

This complex is about 60 percent Blakeland loamy sand, about 30 percent Fluvaquentic Haplaquolls, and 10 percent other soils.

Included with these soils in mapping are areas of Columbine gravelly sandy loam, 0 to 3 percent slopes, Ellicott loamy coarse sand, 0 to 5 percent slopes, and Ustic Torrifluvents, loamy.

The Blakeland soil is in the more sloping areas. It is deep and somewhat excessively drained. It formed in sandy alluvium and eolian material derived from arkosic sedimentary rock. Typically, the surface layer is dark grayish brown loamy sand about 11 inches thick. The substratum, to a depth of 27 inches, is brown loamy sand; it grades to pale brown sand that extends to a depth of 60 inches or more.

Permeability of the Blakeland soil is rapid. The effective rooting depth is more than 60 inches. The available water capacity is moderate to low. Surface runoff is slow, and the hazard of erosion is moderate.

The Fluvaquentic Haplaquolls are in swale areas. They are deep, poorly drained soils. They formed in alluvium derived from arkosic sedimentary rock. Typically, the surface layer is brown. The texture is variable throughout. The water table is at a depth of 0 to 3 feet.

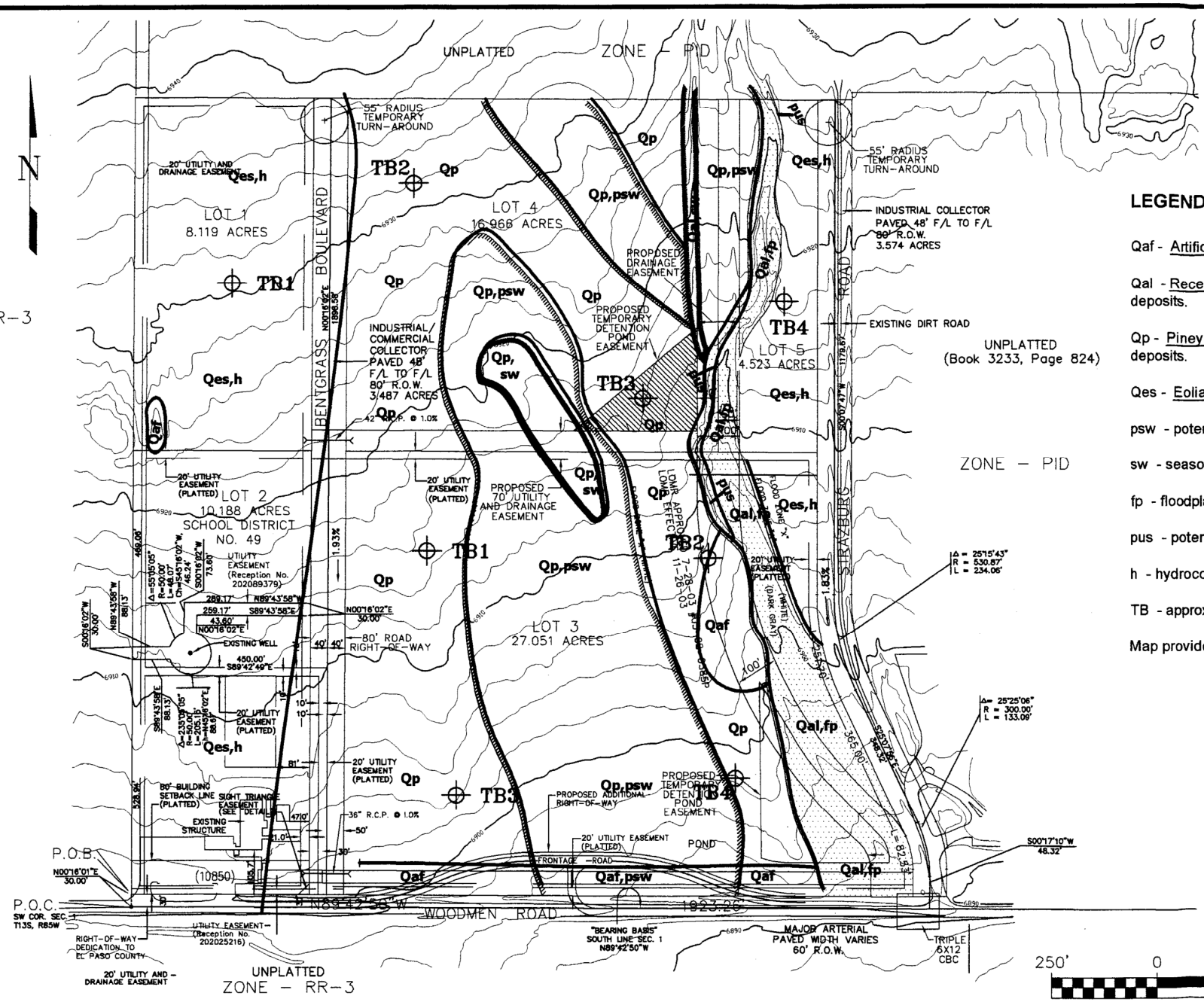
The Blakeland soil is well suited to deep-rooted grasses. Native vegetation is dominantly western wheatgrass, side-oats grama, and needleandthread. Rangeland vegetation on the Fluvaquentic Haplaquolls is dominantly tall grasses, including sand bluestem, switchgrass, prairie cordgrass, little bluestem, and sand reedgrass. Cattails and bulrushes are common in the swampy areas.

Proper range management is needed to prevent excess removal of plant cover from these soils. It is also needed to maintain the productive grasses. Interseeding improves the existing vegetation. Deferment of grazing during the growing season increases plant vigor and soil stability, and it helps to maintain and improve range condition. Proper location of livestock watering facilities helps to control grazing of animals.

Windbreaks and environmental plantings are fairly well suited to these soils. Blowing sand and low available water capacity are the main limitations to the establishment of trees and shrubs. The soils are so loose that trees need to be planted in shallow furrows and plant cover needs to be maintained between the rows. Supplemental irrigation may be needed to insure survival. Trees that are best suited and have good survival are Rocky Mountain juniper, eastern redcedar, ponderosa pine, and Siberian elm. Shrubs that are best suited are skunkbush sumac, lilac, and Siberian peashrub.

The Blakeland soil is well suited to wildlife habitat. It is best suited to habitat for openland and rangeland wildlife. Rangeland wildlife, such as pronghorn antelope, can be encouraged by developing livestock watering facilities, properly managing livestock grazing, and reseeding range where needed. Wetland wildlife can be attracted to the Fluvaquentic Haplaquolls and the wetland habitat can be enhanced by several means. Shallow water developments can be created by digging or by blasting potholes to create open-water areas. Fencing to control livestock grazing is beneficial, and it allows wetland plants such as cattails, reed canarygrass, and rushes to grow. Control of unplanned burning and prevention of drainage that would remove water from the wetlands are good practices. Openland wildlife use the vegetation on these soils for nesting and escape cover. These shallow marsh areas are especially important for winter cover if natural vegetation is allowed to grow.

The Blakeland soil has good potential for homesites, roads, and streets. It needs to be protected from erosion when vegetation has been removed from building sites. The Fluvaquentic Haplaquolls have poor potential for homesites. Their main limitations for this use are the high water table and the hazard of flooding. Capability subclass VIe.



LEGEND

Qaf - Artificial Fill of Quaternary Age: man-made fill.

Qal - Recent Alluvium of Quaternary Age: recent stream deposits.

Qp - Piney Creek Alluvium of Quaternary Age: older stream deposits.

Qes - Eolian Sand of Quaternary Age: wind blown sands.

psw - potentially seasonal shallow groundwater area.

sw - seasonal wet area.

fp - floodplain.

pus - potentially unstable slope

h - hydrocompaction

TB - approximate Test Boring location

Map provided by LDC, Inc.

GEOLOGY / ENGINEERING GEOLOGY MAP

REV

2

56382

19—Columbine gravelly sandy loam, 0 to 3 percent slopes. This deep, well drained to excessively drained soil formed in coarse textured material on alluvial terraces and fans and on flood plains. Elevation ranges from 6,500 to 7,300 feet. The average annual precipitation is about 15 inches, the average annual air temperature is about 47 degrees F, and the average frost-free period is about 135 days.

Typically, the surface layer is grayish brown gravelly sandy loam about 14 inches thick. The underlying material is light yellowish brown very gravelly loamy sand.

Included with this soil in mapping are small areas of Stapleton sandy loam, 3 to 8 percent slopes; Blendon sandy loam, 0 to 3 percent slopes; Louviers silty clay loam, 3 to 18 percent slopes; and Fluvaquentic Haplaquolls, nearly level. In places the parent arkose beds of sandstone or shale are at a depth of 0 to 40 inches.

Permeability of this Columbine soil is very rapid. Effective rooting depth is 60 inches or more. Available water capacity is low to moderate. Surface runoff is slow, and the hazard of erosion is slight to moderate.

This soil is used mainly for grazing livestock and for wildlife habitat. It is also used for homesites.

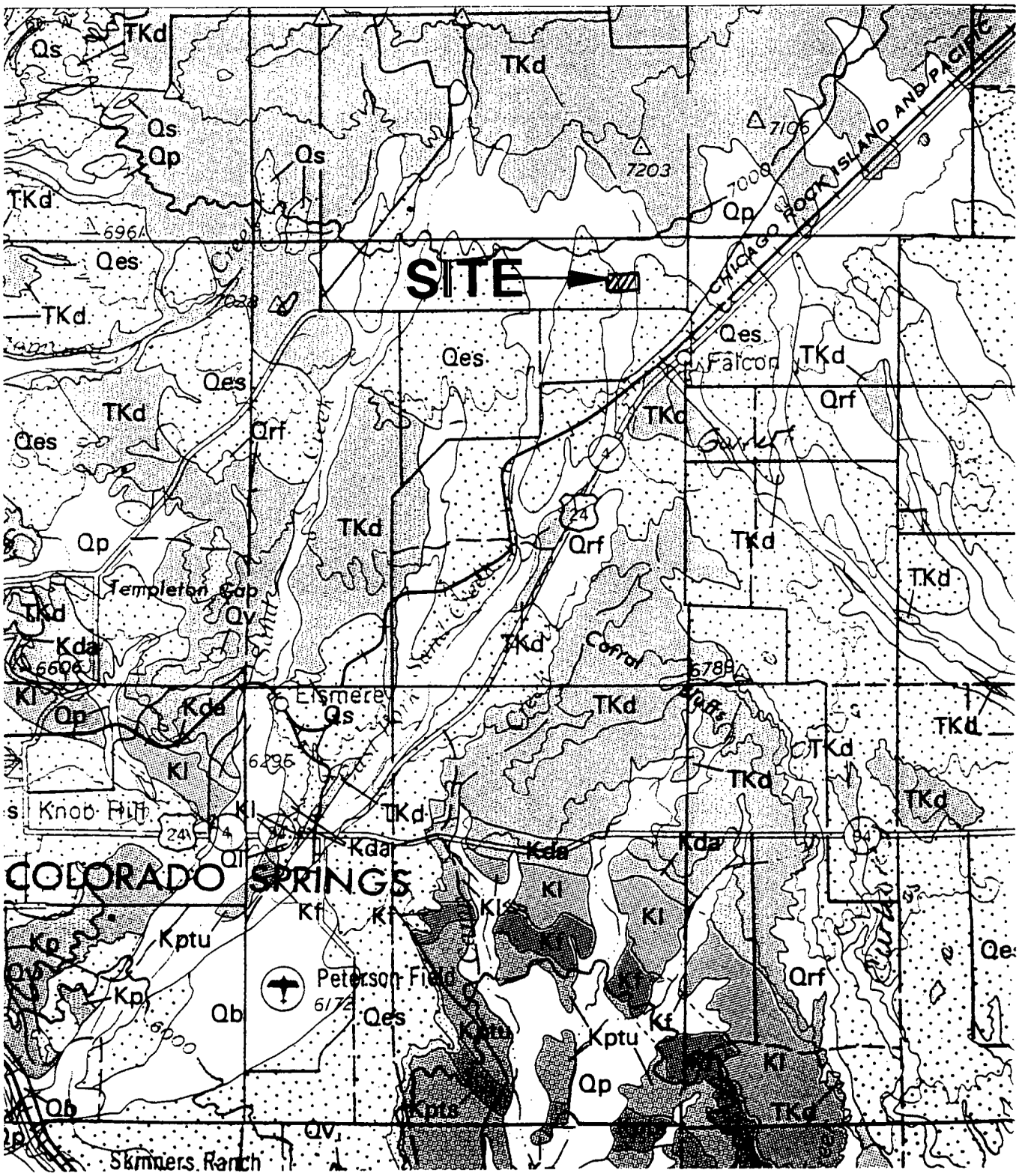
Native vegetation is mainly western wheatgrass, sideoats grama, needleandthread, and little bluestem. The main shrub is true mountainmahogany.

Proper location of livestock watering facilities helps to control grazing.

Windbreaks and environmental plantings are fairly well suited to this soil. Blowing sand and low available water capacity are the principal limitations to the establishment of trees and shrubs. The soil is so loose that trees need to be planted in the rows. Supplemental irrigation may be needed to insure survival. Trees that are best suited and have good survival are Rocky Mountain juniper, eastern redcedar, ponderosa pine, and Siberian elm. Shrubs that are best suited are skunkbush sumac, lilac, and Siberian peashrub.

Rangeland wildlife, such as pronghorn antelope, cottontail, coyote, and scaled quail, is best adapted to life on this droughty soil. Forage production is typically loam, and proper livestock grazing management is necessary if wildlife and livestock share the range. Livestock watering developments are also important and are used by various wildlife species.

The main limitation of this soil for urban development is a hazard of flooding in some areas. Care must be taken when locating septic tank absorption fields because of possible pollution as a result of the very rapid permeability of this soil. Capability subclass VIe.



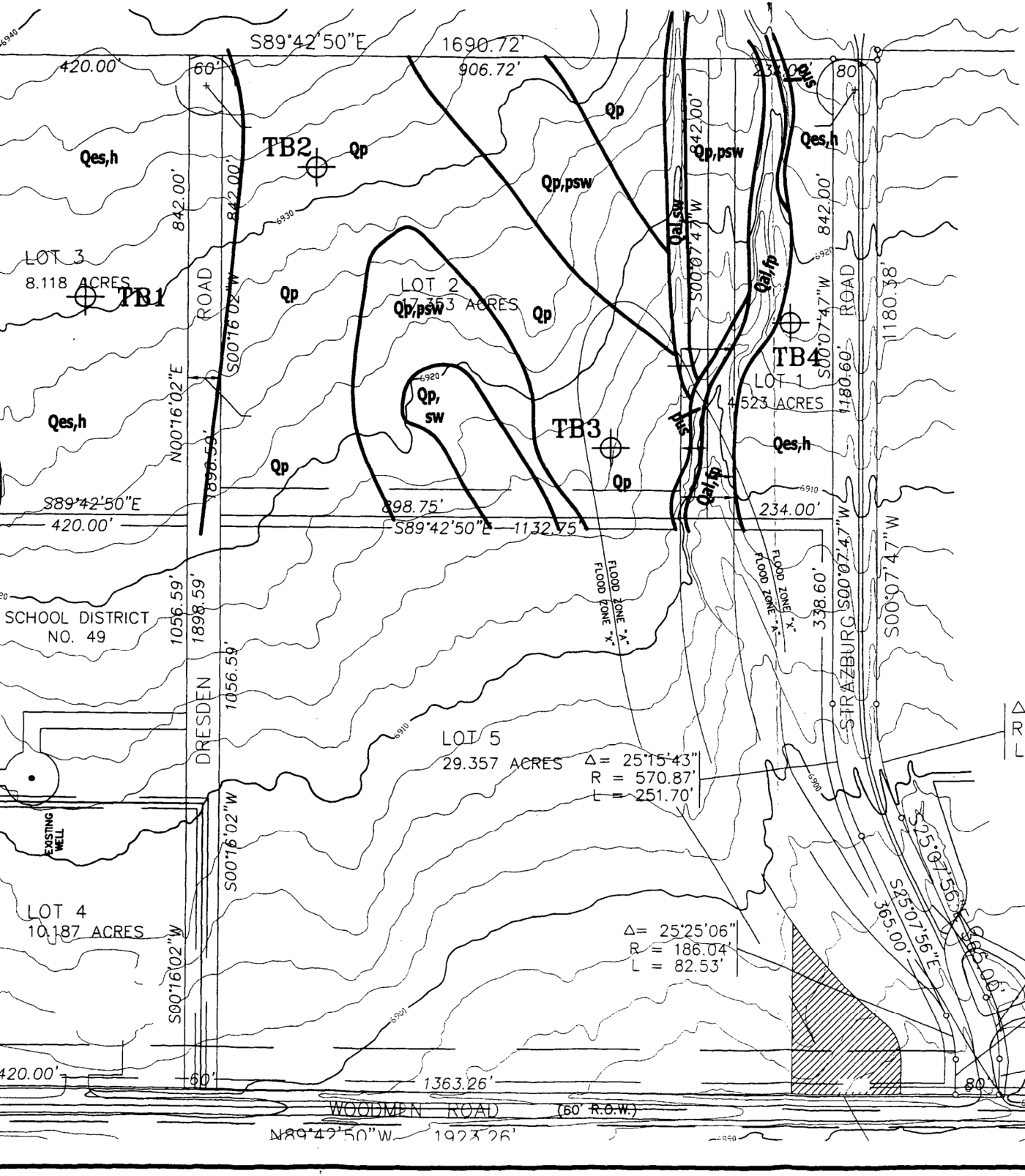
ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

COLORADO SPRINGS GEOLOGY MAP
FUTURE PID
FOR: KARL ANDREWS

DRAWN:	DATE:	CHECKED:	DATE:
RJO	2AUG02	KAW	8/9/02

JOB NO.: 56392

FIG NO.: 7



LEGEND

Qaf Artificial Fill of Quaternary Age: man-made fill.

Qal Recent Alluvium of Quaternary Age: recent stream deposits.

Qp Piney Creek Alluvium of Quaternary Age: older stream deposits.

Qes Eolian Sand of Quaternary Age: wind blown sands.

psw potentially seasonal shallow groundwater area.

sw seasonal wet area.

fp floodplain.

pus potentially unstable slope

h hydrocompaction

TB approximate Test Boring location

PRELIMINARY PLAN BY: LDC, INC.

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE A99 To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.

ZONE V Coastal flood with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

ZONE X Areas determined to be outside 500-year floodplain.

ZONE D Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Identified 1990

Otherwise Protected Areas

eas are normally located within or adjacent to Special as.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

Base Flood Elevation Line; Elevation in Feet. See Map Index for Elevation Datum.

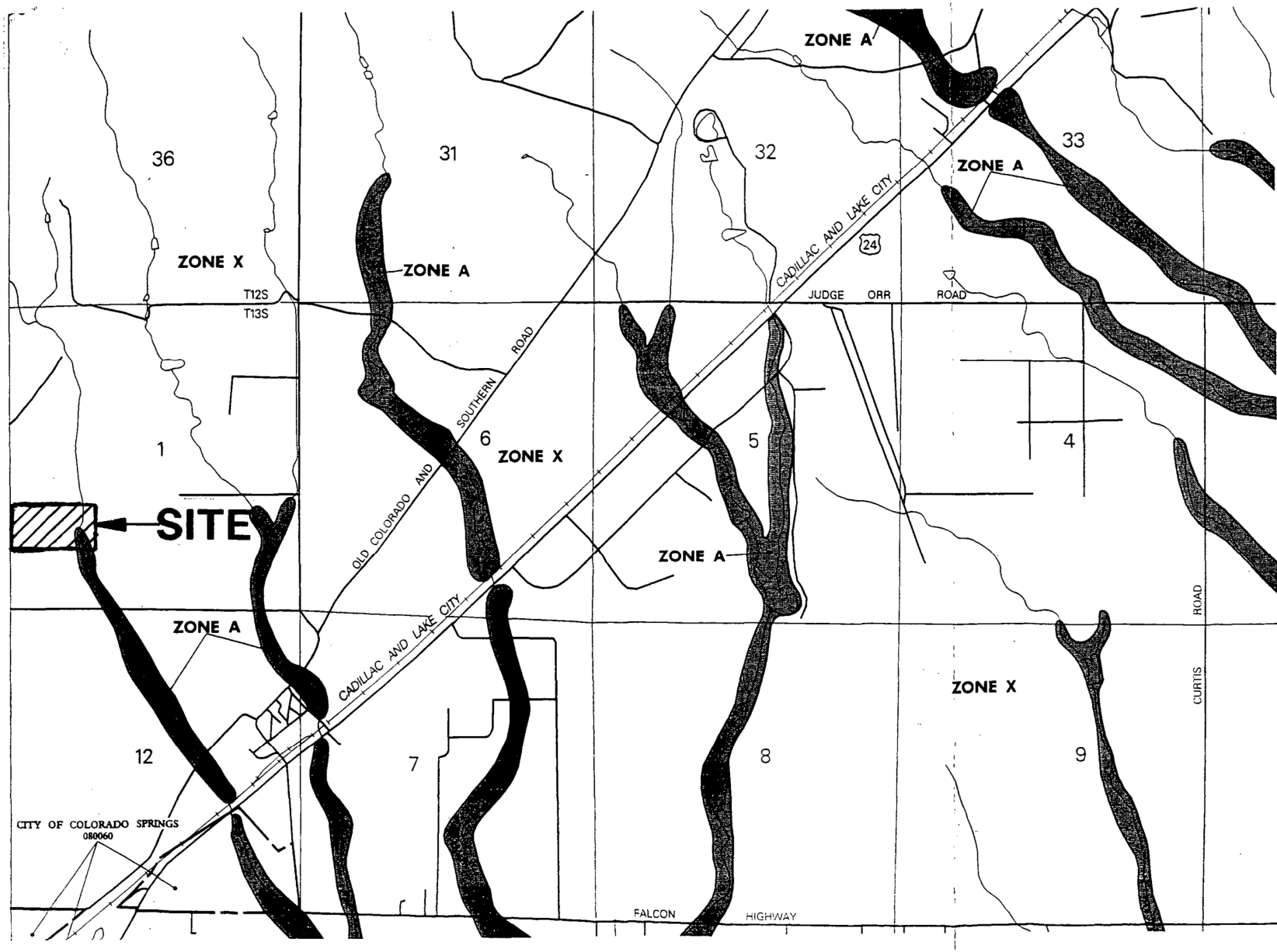
D Cross Section Line

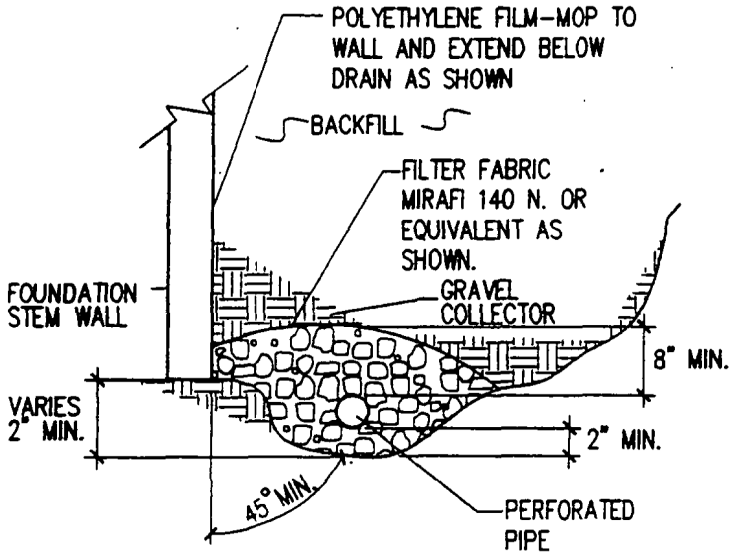
7) Base Flood Elevation in Feet Where Uniform Within Zone. See Map Index for Elevation Datum.

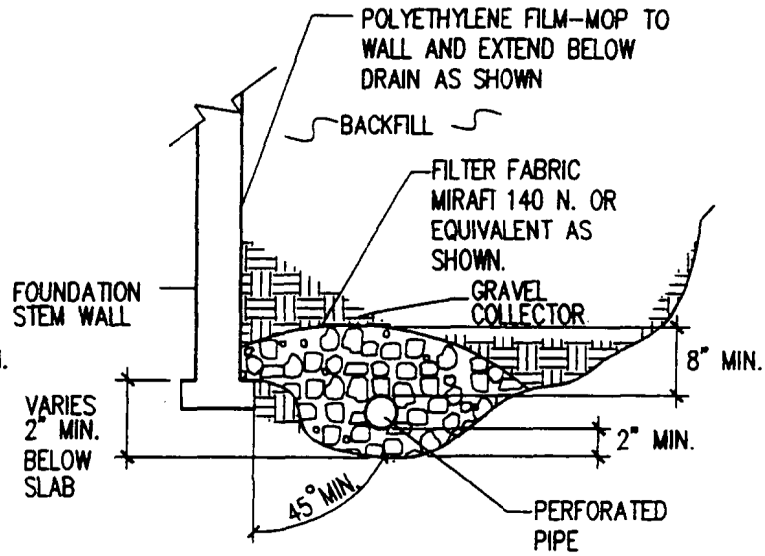
X Elevation Reference Mark

2 River Mile

°22'30" Horizontal Coordinates Based on North American Datum of 1927 (NAD 27) Projection.







NOTES:

-GRAVEL SIZE IS RELATED TO DIAMETER OF PIPE PERFORATIONS-85% GRAVEL GREATER THAN 2x PERFORATION DIAMETER.

-PIPE DIAMETER DEPENDS UPON EXPECTED SEEPAGE. 4-INCH DIAMETER IS MOST OFTEN USED.

-ALL PIPE SHALL BE PERFORATED PLASTIC. THE DISCHARGE PORTION OF THE PIPE SHOULD BE NON-PERFORATED PIPE.

-FLEXIBLE PIPE MAY BE USED UP TO 8 FEET IN DEPTH, IF SUCH PIPE IS DESIGNED TO WITHSTAND THE PRESSURES. RIGID PLASTIC PIPE WOULD OTHERWISE BE REQUIRED.

-MINIMUM GRADE FOR DRAIN PIPE TO BE 1% OR 3 INCHES OF FALL IN 25 FEET.

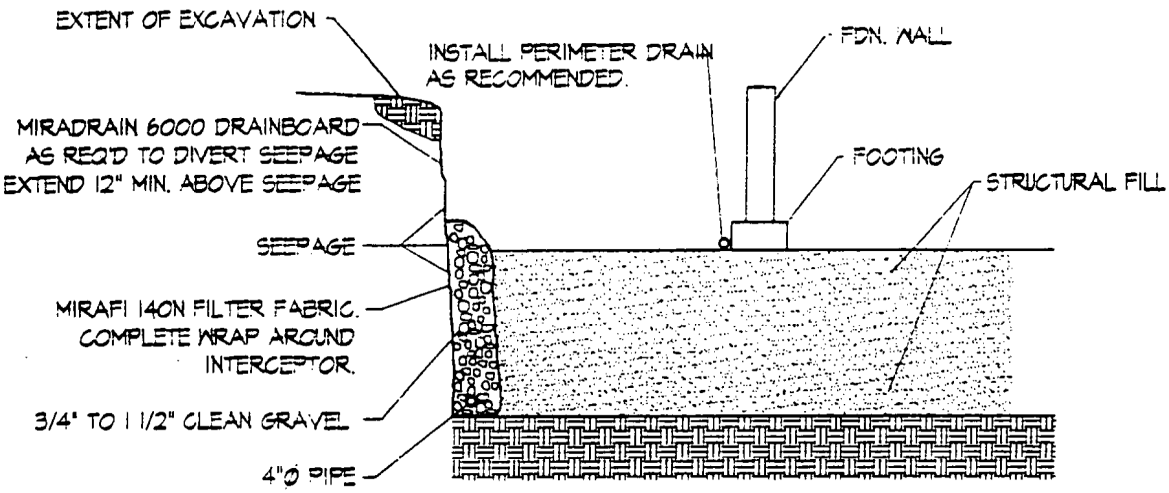
-DRAIN TO BE PROVIDED WITH A FREE GRAVITY OUTFALL, IF POSSIBLE. A SUMP AND PUMP MAY BE USED IF GRAVITY OUT FALL IS NOT AVAILABLE.

DRAWN	M. VAN KAMPEN
CHECKED	Kaff
DATE	8/9/92
SCALE	NTS
JOB NO.	56392
DWG. NO.	10

PERIMETER DRAIN DETAILS

ENTECH ENGINEERING, INC.
565 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

REVISION	BY



NOTE:
EXTEND INTERCEPTOR DRAIN TO DAYLIGHT

INTERCEPTOR DRAIN DETAIL

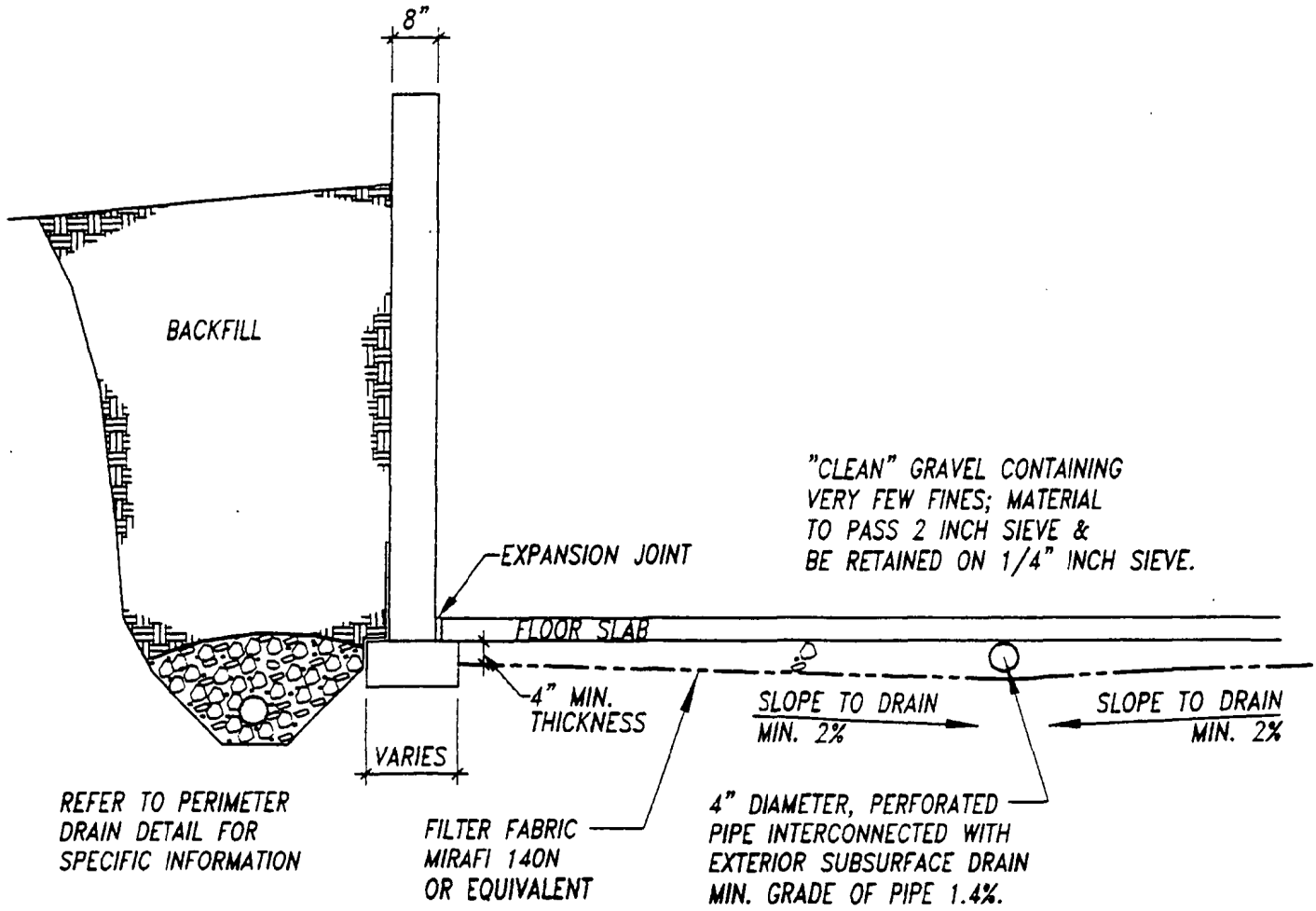
N.T.S.

DRAWN	RLTETI
CHECKED	KAH
DATE	9/19/02
SCALE	NTS
JOB NO.	56392
OF SHEET	11 SHEETS

INTERCEPTOR DRAIN DETAIL

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

REVISION	BY



DRAWN	C. WALTON
CHECKED	RAK
DATE	8/9/02
SCALE	NTS
JOB NO.	56392
SHEET	12

TYP. UNDERSLAB DRAINAGE
LAYER (CAPILLARY BREAK)

ENTECH
ENGINEERING, INC.
503 ELKTON DRIVE
COLORADO SPRINGS, CO 80907 (719) 531-5599

REVISION	BY

APPENDIX A: Test Boring Logs

TEST BORING NO. 1
DATE DRILLED 7/18/02
Job # 56392

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 20', 07/22/02						
SAND, SILTY, FINE TO COARSE GRAINED, BROWN TO TAN, DENSE, MOIST				31	5.4	1
	5			33	7.3	1
SAND, SLIGHTLY CLAYEY, COARSE GRAINED, LIGHT BROWN, MEDIUM DENSE, MOIST	10			13	7.1	1
SANDSTONE, CLAYEY, MEDIUM TO COARSE GRAINED, VERY DENSE, MOIST	15			50 9"	10.2	3
	20			50 6"	10.1	3

TEST BORING NO. 2
DATE DRILLED 7/18/02
CLIENT KARL F. ANDREWS, JR.
LOCATION FUTURE PID, ADJ TO WOODMEN RD

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
WATER AT 18', 07/22/02						
SAND, SILTY, FINE TO MEDIUM GRAINED, BROWN, LOOSE TO MEDIUM DENSE, DRY TO MOIST				9	1.9	1
	5			18	3.3	
SAND, SLIGHTLY SILTY, FINE GRAINED, TAN, LOOSE, MOIST	10			10	6.1	1
SAND, CLAYEY, MEDIUM TO COARSE GRAINED, LIGHT GRAY, MEDIUM DENSE, MOIST	15			18	16.4	1
SANDSTONE, VERY CLAYEY, MEDIUM TO COARSE GRAINED, LIGHT GRAY, VERY DENSE, MOIST	20			50 6"	10.5	3

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505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
		KAH	7/26/07

JOB NO.: 56392
FIG NO.: A-1

TEST BORING NO. 3
DATE DRILLED 7/18/02
Job # 56392

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 14', 07/22/02						
SAND, SILTY, BROWN						
SANDSTONE, SLIGHTLY SILTY, MEDIUM TO COARSE GRAINED, LIGHT BROWN TO TAN, VERY DENSE, MOIST				50	2.5	3
	5			50 / 11"	5.4	3
	10			50 / 7"	5.8	3
SANDSTONE, CLAYEY, MEDIUM TO COARSE GRAINED, LIGHT GRAY, VERY DENSE, MOIST	15			50 / 4"	7.7	3
	20					

TEST BORING NO. 4
DATE DRILLED 7/18/02
CLIENT KARL F. ANDREWS, JR.
LOCATION FUTURE PID, ADJ TO WOODMEN RD

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 19', 07/22/02						
SAND, MEDIUM TO COARSE GRAINED, LIGHT BROWN, MEDIUM DENSE, DRY				17	1.0	1
CLAY, SILTY, OLIVE GRAY, STIFF, MOIST	5			17	17.6	2
SANDSTONE, SILTY, FINE GRAINED, LIGHT GRAY, VERY DENSE, MOIST	10			50 / 7"	10.7	3
SANDSTONE, CLAYEY, COARSE GRAINED, GRAY, VERY DENSE, MOIST	15			50 / 6"	9.3	3
	20			50 / 5"	7.2	3

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COLORADO SPRINGS, CO. 80907 (719) 531-5599

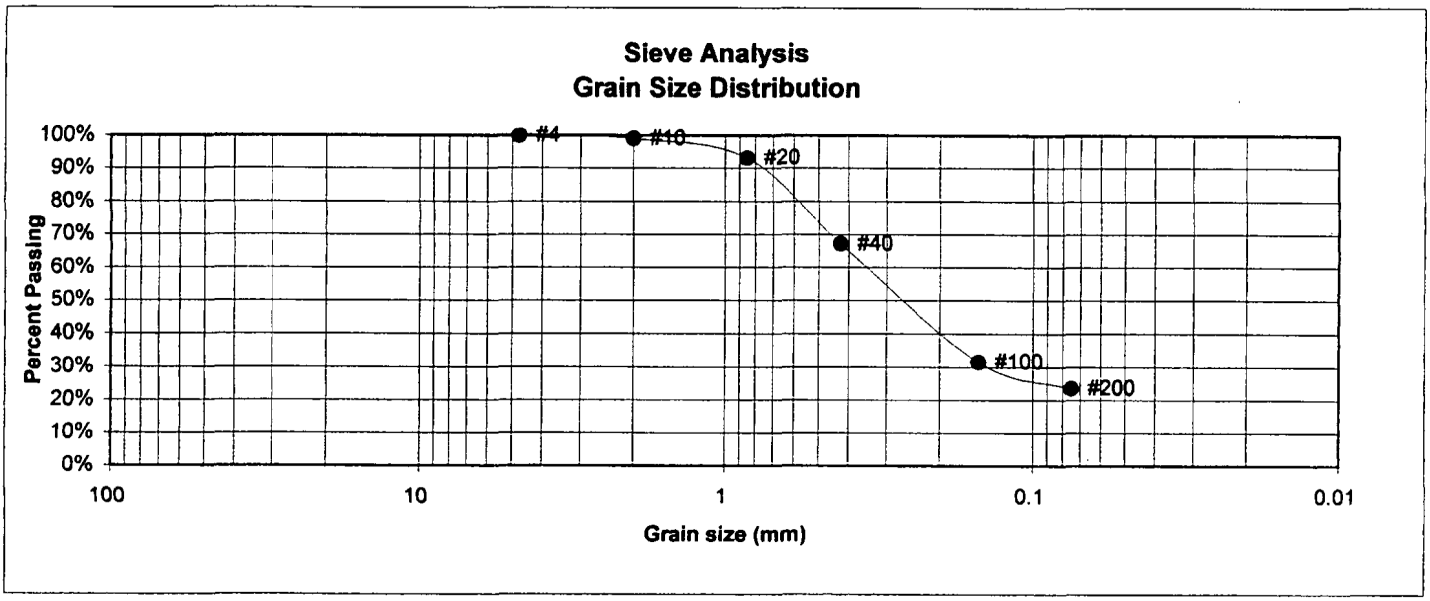
TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
		KAH	7/26/02

JOB NO.: 56392
FIG NO.: A-2

APPENDIX B: Laboratory Test Results

UNIFIED CLASSIFICATION	SM	CLIENT	KARL F. ANDREWS, JR.
SOIL TYPE #	1	PROJECT	FUTURE PID, ADJ TO WOODMEN RD
TEST BORING #	TB1	JOB NO.	56392
DEPTH	5'	TEST BY	DG



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.1%
20	93.2%
40	67.2%
100	31.6%
200	23.6%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

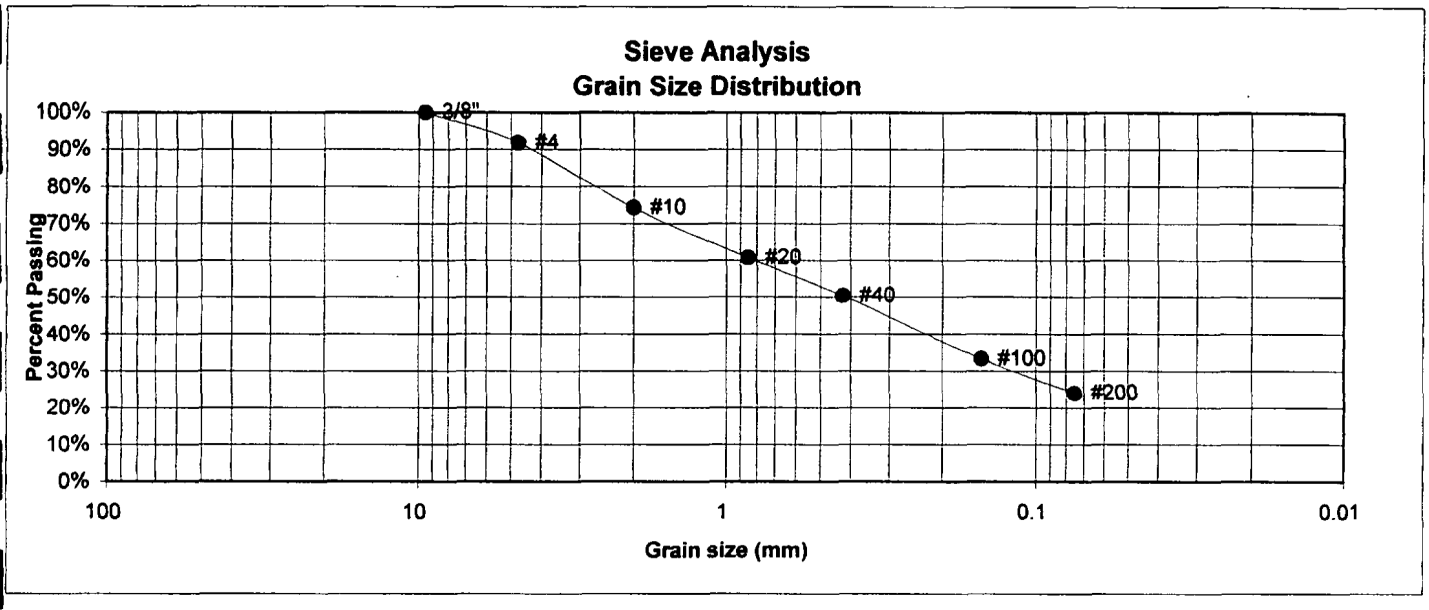
ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		KAH	7/26/02

JOB NO.: 56392
FIG NO.: B-1

UNIFIED CLASSIFICATION	SM	CLIENT	KARL F. ANDREWS, JR.
SOIL TYPE #	1	PROJECT	FUTURE PID, ADJ TO WOODMEN RD
TEST BORING #	TB2	JOB NO.	56392
DEPTH	2-5'	TEST BY	DG



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	91.8%
10	74.3%
20	60.8%
40	50.4%
100	33.4%
200	24.0%

Atterberg Limits	
Plastic Limit	19
Liquid Limit	19
Plastic Index	0

Swell	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

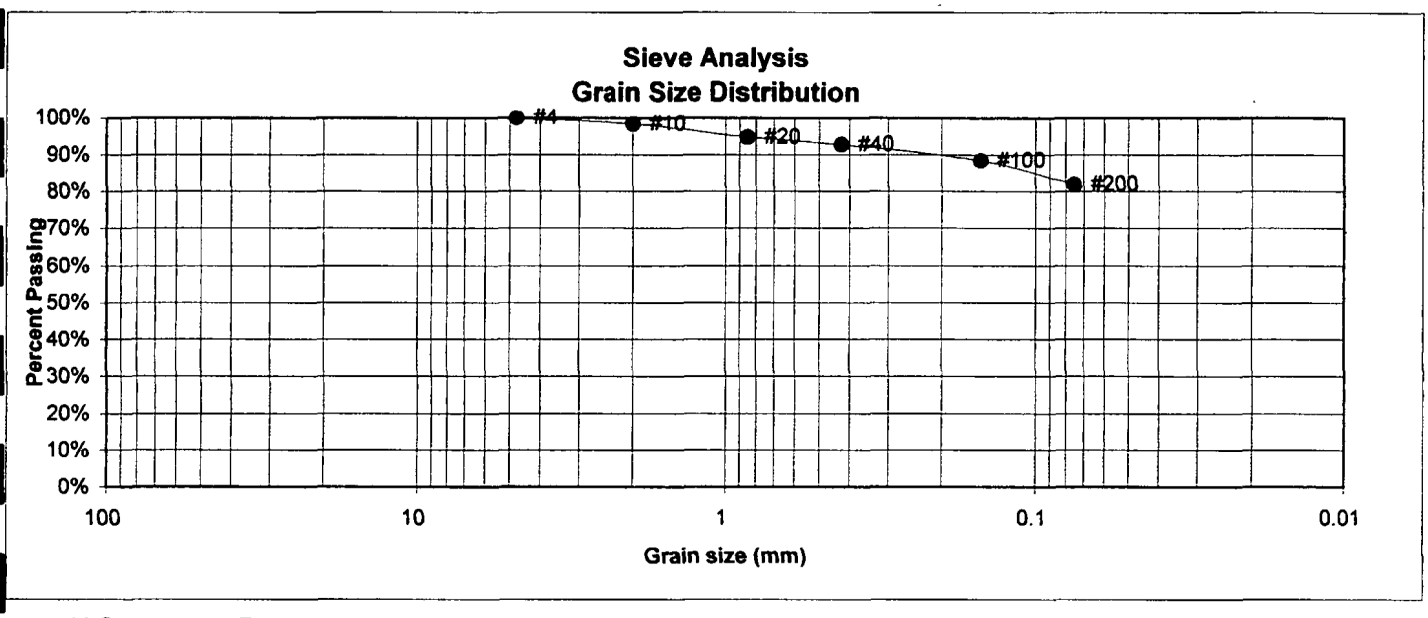
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		KAA	7/26/02

JOB NO.: 56392

FIG NO.: B-2

UNIFIED CLASSIFICATION	CL	CLIENT	KARL F. ANDREWS, JR.
SOIL TYPE #	2	PROJECT	FUTURE PID, ADJ TO WOODMEN RD
TEST BORING #	TB4	JOB NO.	56392
DEPTH	5'	TEST BY	DG



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	98.3%
20	94.7%
40	92.7%
100	88.4%
200	81.8%

Atterberg Limits	
Plastic Limit	
Liquid Limit	
Plastic Index	
Swell	
Moisture at start	12.6%
Moisture at finish	25.6%
Moisture increase	13.0%
Initial dry density (pcf)	95
Swell (psf)	1364

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

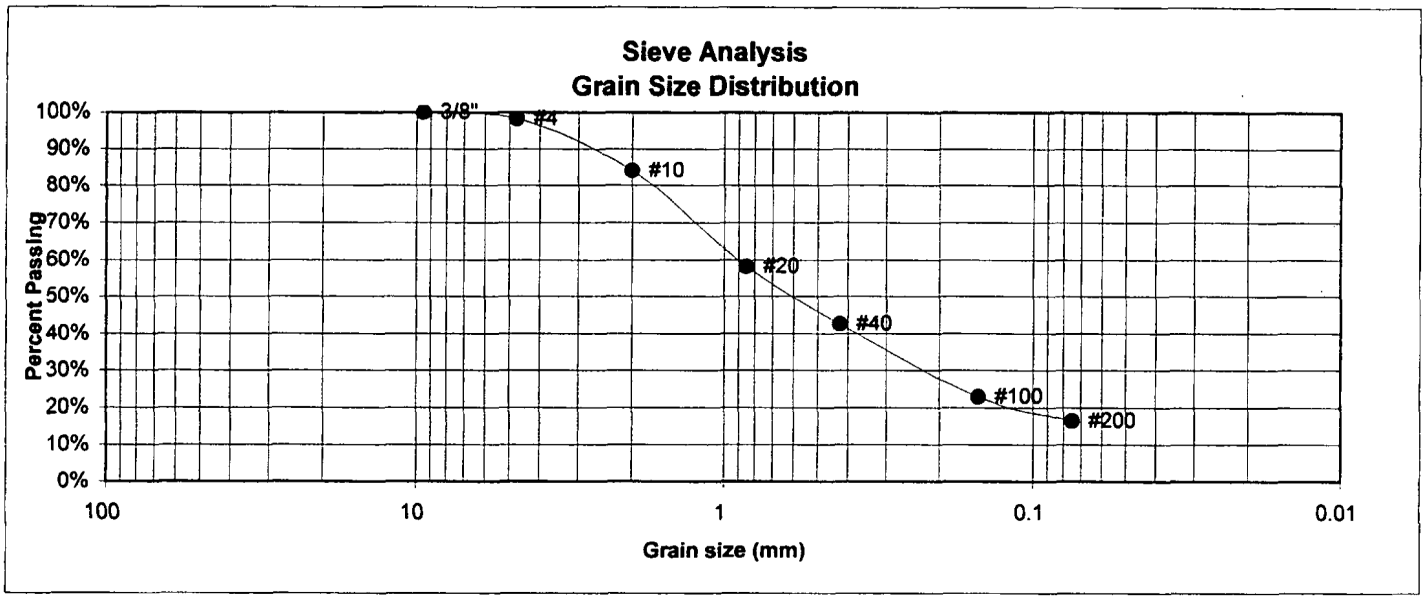
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		KAA	7/26/02

JOB NO.: 56392

FIG NO.: B-3

UNIFIED CLASSIFICATION	SM	CLIENT	KARL F. ANDREWS, JR.
SOIL TYPE #	3	PROJECT	FUTURE PID, ADJ TO WOODMEN RD
TEST BORING #	TB3	JOB NO.	56392
DEPTH	2-3'	TEST BY	DG



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	98.3%
10	84.1%
20	58.3%
40	42.7%
100	22.9%
200	16.4%

Atterberg Limits

Plastic Limit

Liquid Limit

Plastic Index

Swell

Moisture at start

Moisture at finish

Moisture increase

Initial dry density (pcf)

Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

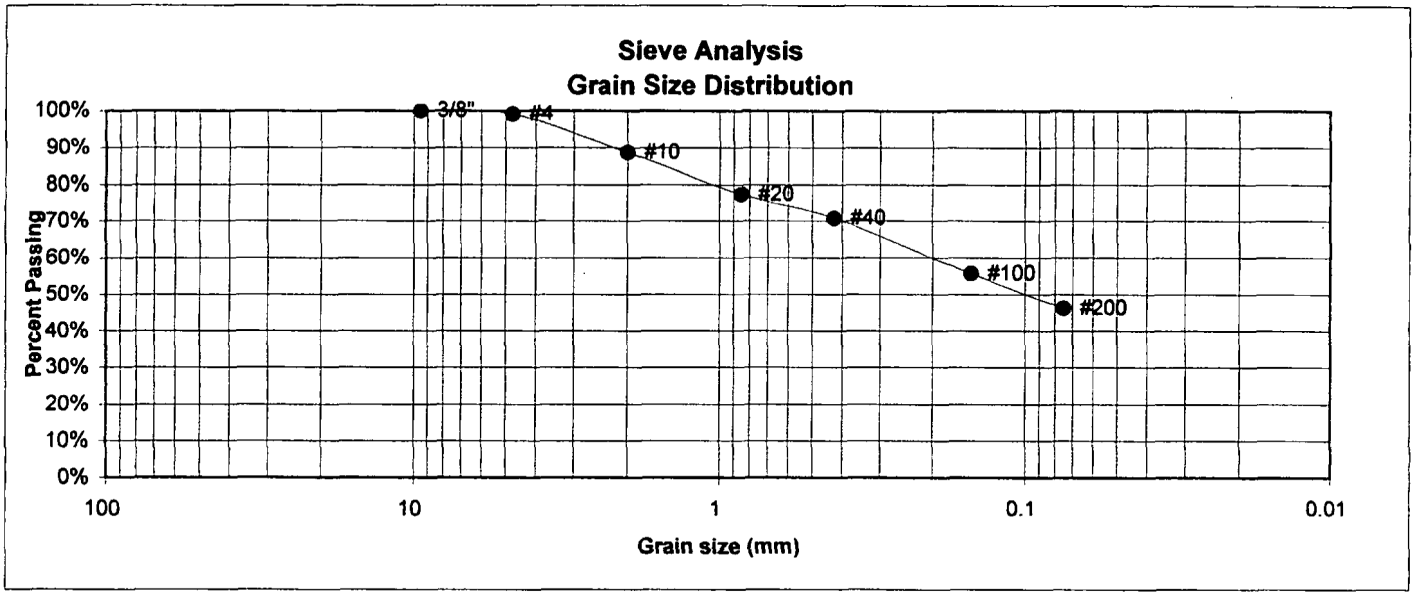
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		KAA	7/26/02

JOB NO.: 56392

FIG NO.: B-4

UNIFIED CLASSIFICATION	SC	CLIENT	KARL F. ANDREWS, JR.
SOIL TYPE #	3	PROJECT	FUTURE PID, ADJ TO WOODMEN RD
TEST BORING #	TB3	JOB NO.	56392
DEPTH	15'	TEST BY	DG



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.1%
10	88.7%
20	77.4%
40	70.8%
100	55.7%
200	46.3%

Atterberg Limits	
Plastic Limit	15
Liquid Limit	24
Plastic Index	9

Swell	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		KAH	7/26/02

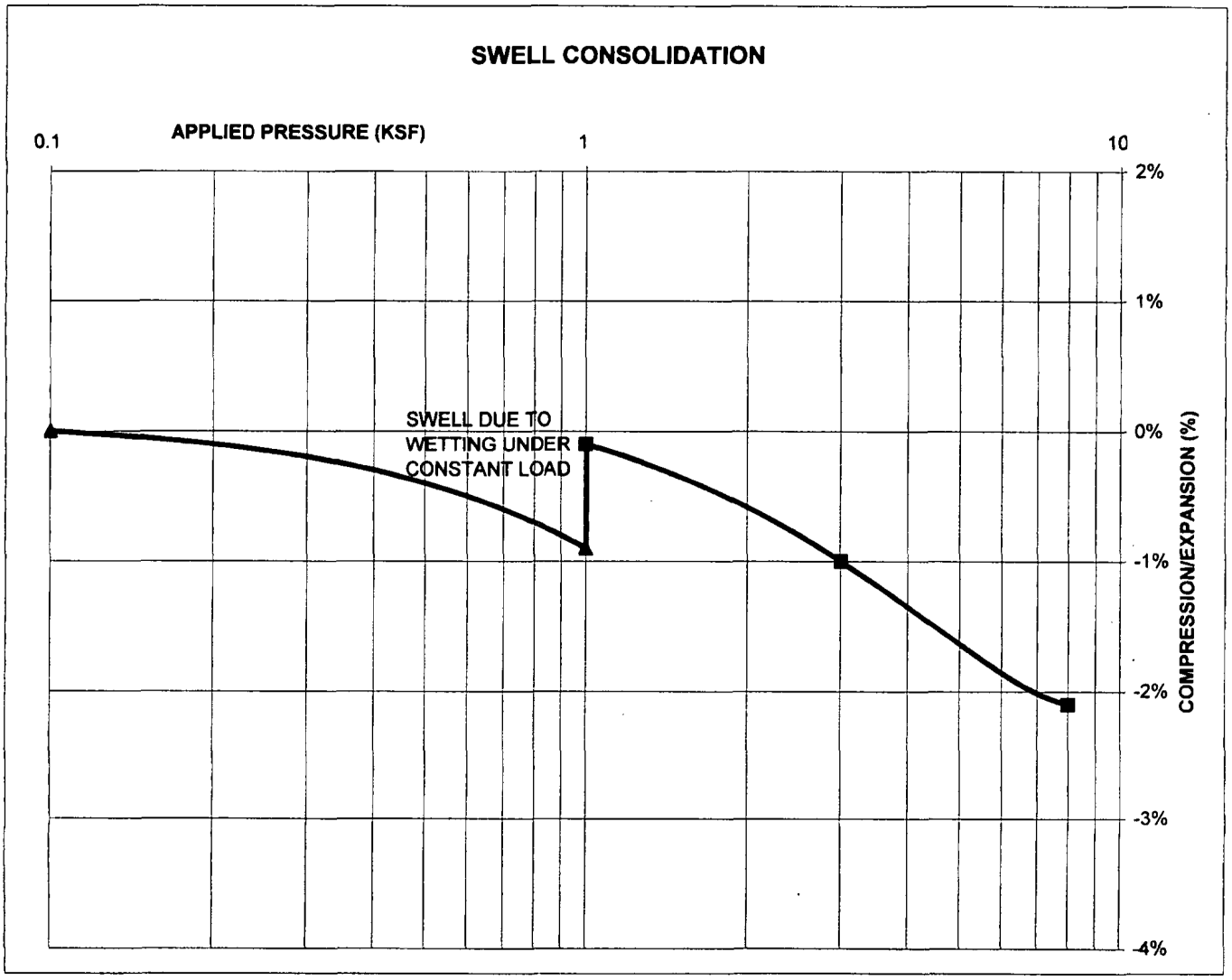
JOB NO.: 56392

FIG NO.: B-5

CONSOLIDATION TEST RESULTS

SAMPLE FROM:	TB3	AT DEPTH	15'
DESCRIPTION	SC	SOIL TYPE	3
NATURAL UNIT DRY WEIGHT (PCF)			122
NATURAL MOISTURE CONTENT			10.3%
SWELL/CONSOLIDATION (%)			0.8%

JOB NO. 56392
CLIENT KARL F. ANDREWS, JR.
PROJECT FUTURE PID, ADJ TO WOODMEN RD



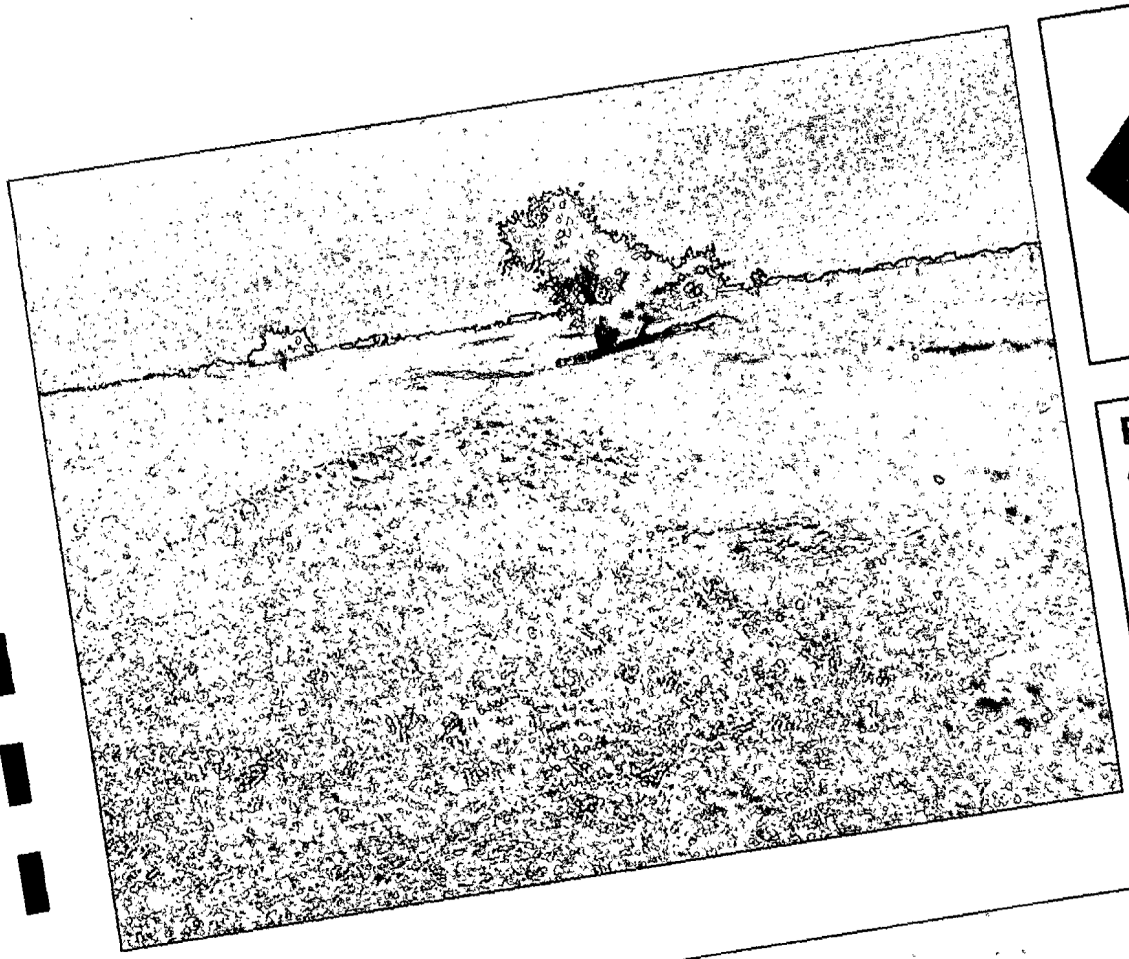
ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

SWELL CONSOLIDATION
TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		KAA	7/26/02

JOB NO.: 56392
FIG NO.: B-6

APPENDIX C: Site Photographs



1

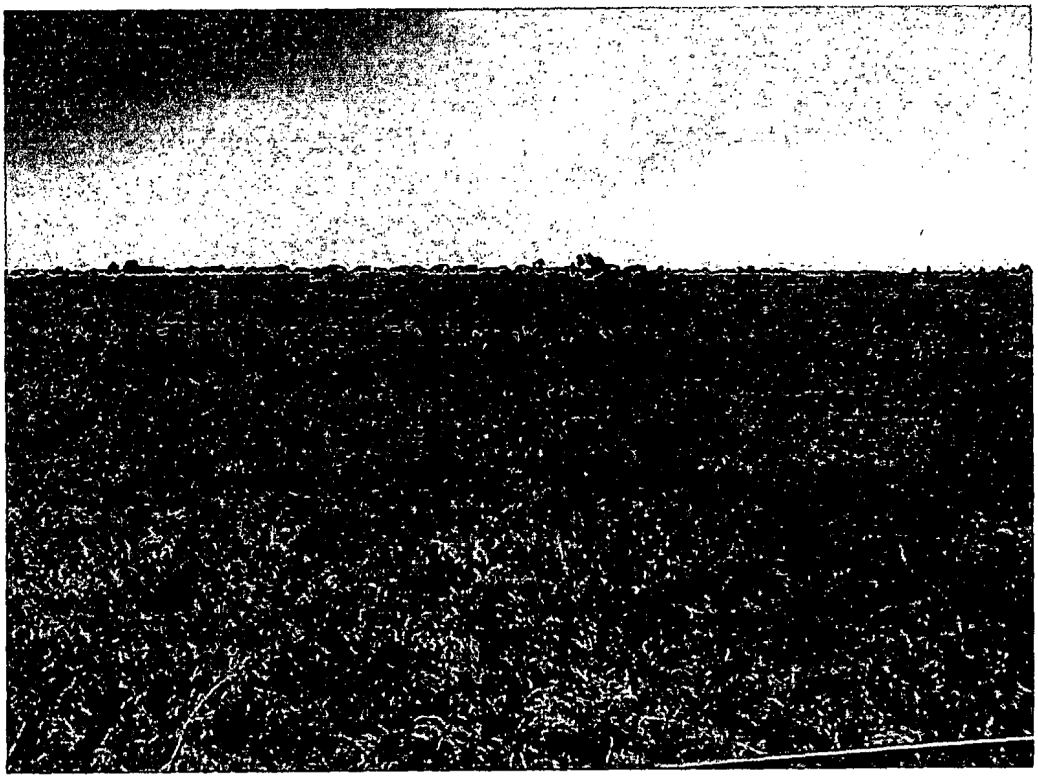
From south end of site, looking north.

2

From south-central portion of site, looking west towards seasonally wet area.

3

From north-central portion of site, looking south.



4

From southwest corner of site, looking northeast.

August 28, 2002

Project: Latigo Business Center, El Paso County, CO

Location: Portion of SW$\frac{1}{4}$ of Section 1, T. 13 S., R. 65 W. of the 6th P.M., El Paso County, CO

Subject: Natural Features Statement

The natural features of the site are as described in the following report:

Soil, Beology and Geologic Hazard Study for
Latigo Business Center, Lots 1-3 and 4-5,
By Entech Engineering, Inc., August 28, 2002.

Paragraph 2.0 of the report, also attached herewith, and Appendix C, photographs, attached, provide a description of the natural features of the site.

ENTECH
ENGINEERING, INC.

505 ELKTON DRIVE
COLORADO SPRINGS, CO 80907
PHONE (719) 531-5599
FAX (719) 531-5238

SOIL, GEOLOGY AND GEOLOGIC HAZARD STUDY LATIGO BUSINESS CENTER, LOTS 1-3 WOODMEN ROAD EL PASO COUNTY, COLORADO

Prepared for

Karl F. Andrews, Jr.
102 E. Pikes Peak Avenue
Colorado Springs, Colorado 80903

August 28, 2002

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Kristen A. Andrew-Hoeser
Professional Engineering Geologist

KAH/ek

Encl.

Entech Job No. 56392
2MSW/rep/2001/56392sgghz

Reviewed by:

Joseph C. Goode, Jr., P.E.
President

COLORADO REGISTERED
JOSEPH COLLIN GOODE JR.
23725
PROFESSIONAL ENGINEER

ENTECH
ENGINEERING, INC.

505 ELKTON DRIVE
COLORADO SPRINGS, CO 80907
PHONE (719) 531-5599
FAX (719) 531-5238

SOIL, GEOLOGY AND GEOLOGIC HAZARD STUDY LOTS 4 AND 5, LATIGO BUSINESS CENTER A REPLAT OF LATIGO BUSINESS AND INDUSTRIAL CENTER, FILING NO. 1 WOODMEN ROAD EL PASO COUNTY, COLORADO

Prepared for

Karl F. Andrews, Jr.
102 E. Pikes Peak Avenue
Colorado Springs, Colorado 80903

August 28, 2002

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Kristen A. Andrew-Hoeser
Professional Engineering Geologist

KAH/ek

Encl.

Entech Job No. 56382
2MSW/rep/2001/56382sgghz

Reviewed by:

Joseph C. Goode, Jr., P.E.
President

COLORADO REGISTERED
JOSEPH COLLIN GOODE JR.
23725
PROFESSIONAL ENGINEER

2.0 GENERAL SITE CONDITIONS AND PROJECT DESCRIPTION

The site is located in a portion of the SW ¼ of Section 1, Township 13 South, Range 65 West, in El Paso County, Colorado. The site is located north of Woodmen Road, approximately 1 mile northeast of Falcon, Colorado. The approximate boundaries of the site are as shown on the Vicinity Map, Figure 1.

The topography of the site is gently to moderately sloping over the majority of the site. The major drainage on-site trends in southerly direction. No water was observed flowing in the drainage at the time of this investigation, however, evidence of periodic shallow water was observed in the vegetation and surface soils. The boundaries of the site are shown on the USGS map, Figure 2. Previous land uses have been agricultural as the area has been primarily used as grazing and pasture land. The site contains primarily low to mid-prairie grasses over the entire site. Site photographs are included in Appendix C. The approximate locations and directions of the photographs are indicated on the Test Boring Location Plan, Figure 3.

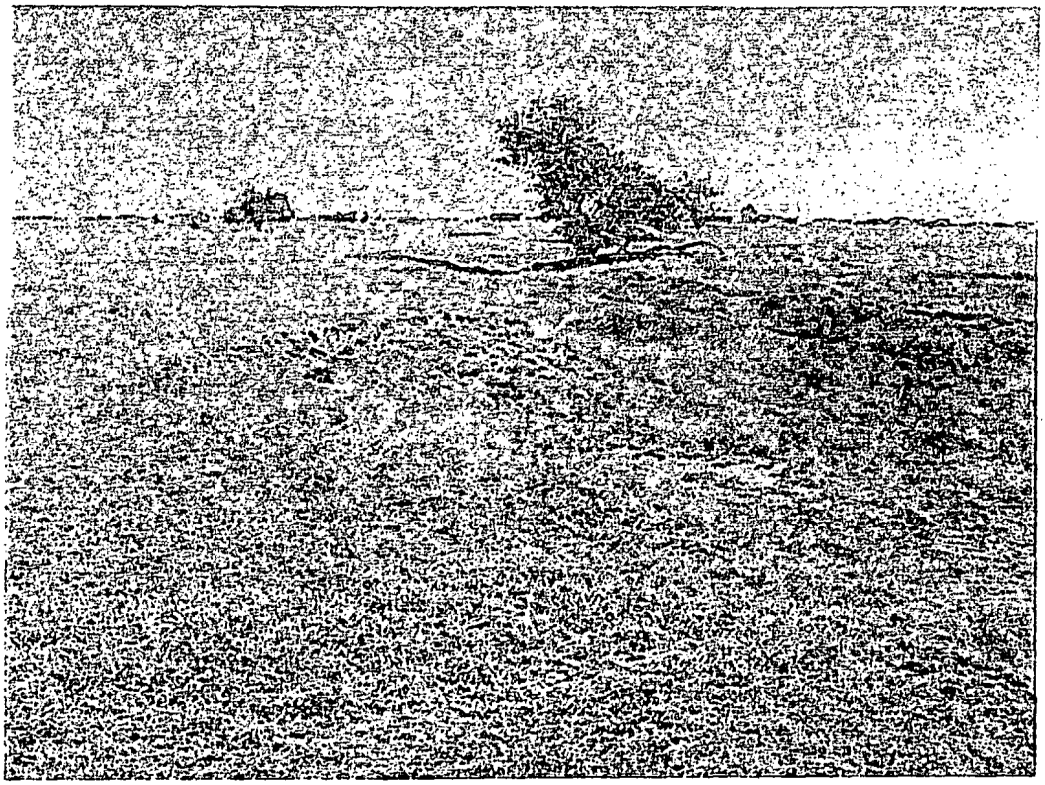
Total acreage involved in the proposed development is approximately 30 acres. It is our understanding that the proposed development will consist of commercial development. The area will be serviced by Woodmen Hills Metropolitan District.

3.0 SCOPE OF THE REPORT

The scope of this report will include the following:

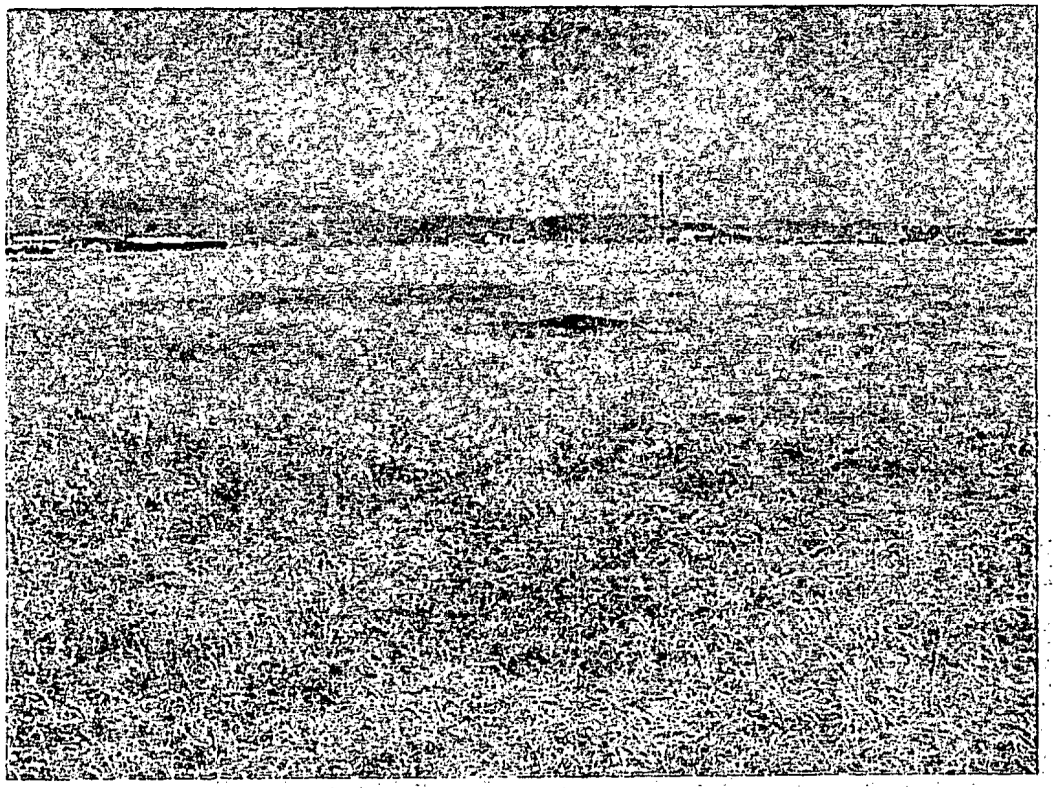
- A general geologic analysis utilizing published geologic data. Detailed site-specific mapping will be conducted to obtain general information in respect to major geographic and geologic features, geologic descriptions and their effects on the development of the property.

APPENDIX C: Site Photographs



1

From south end of site, looking north.

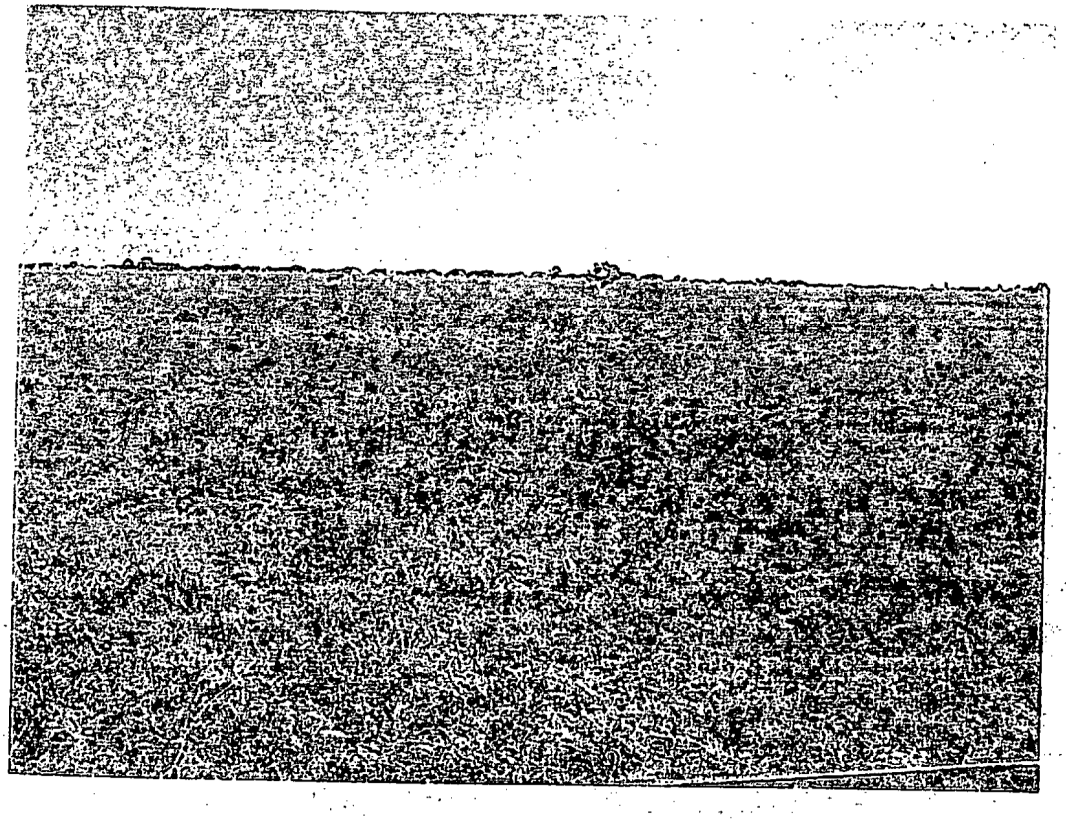


2

From south-central portion of site, looking west towards seasonally wet area.

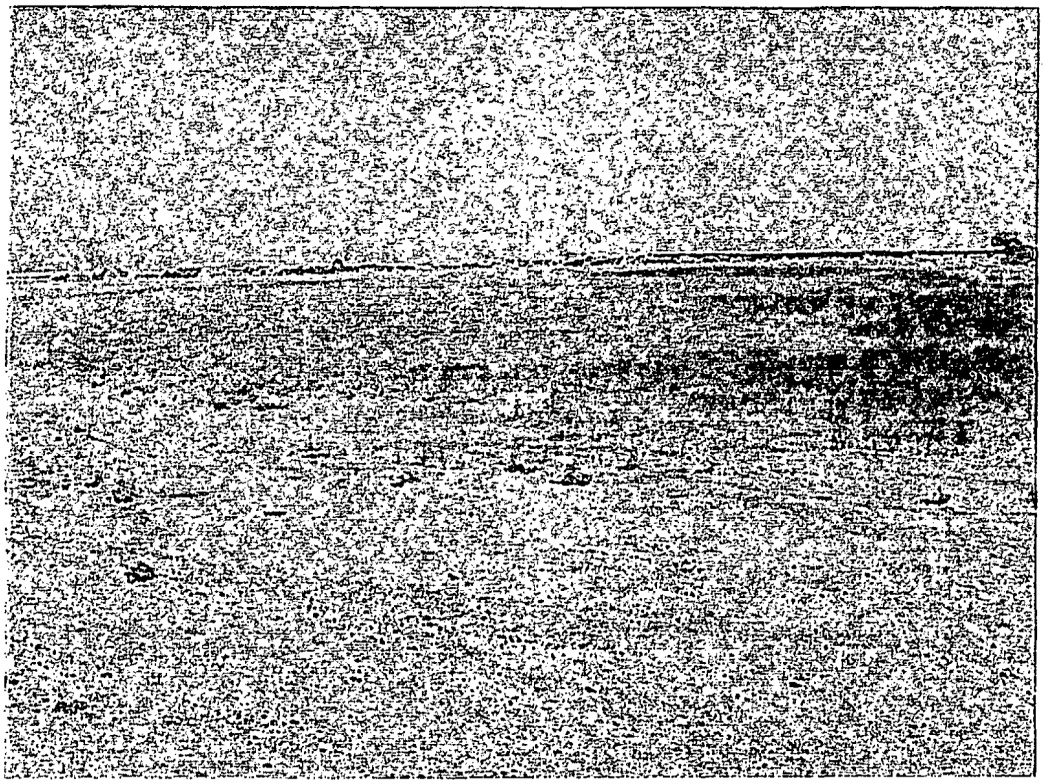
3

From north-central portion of site, looking south.



4

From southwest corner of site, looking northeast.



1

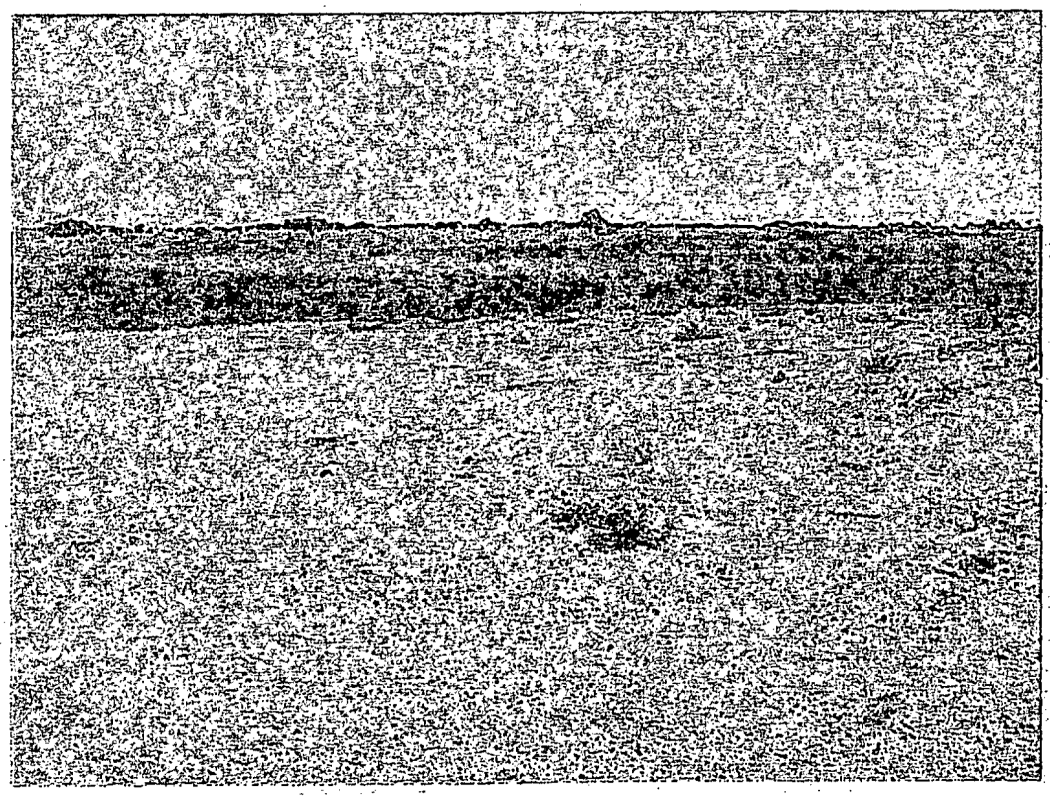
Looking northwest from southeast corner of site.

2

Looking southeast from northwest corner of site.

3

Looking south from northern portion of site.



4

Looking northeast from southwest corner of site.